Interdialect Phonology in Second Dialect Acquisition

Aaron E. Drews

Doctor of Philosophy
Faculty of Arts
University of Edinburgh
Original Version: MM
Corrected Version: MMII
Final Version: MMIV

Abstract

Interdialect phonology is the phonological system of speakers who have acquired some of the distinguishing attributes of a second dialect. An interdialect is the stage 'in between' speaking one's native dialect and fully acquiring a second dialect. An interdialect - in parallel with an interlanguage - functions as the second dialect competence, even if the second dialect is not fully acquired. The 'mid-Atlantic dialect' is an example of an interdialect. This study is based on Chambers (1992) and examines the phonologies of American families living in the London area. Additionally, British families living in North America were also recorded and examined in this thesis. This thesis does not show how a second dialect is acquired, per se, but how the interdialect phonology develops as part of the second dialect acquisition process. This thesis shows what an interdialect is. Given the inherent closeness between two dialects, this thesis discusses the relationship between the interdialect, the native phonological competence and the second dialect target. Several phonological phenomena are examined in this thesis: medial /t/; the relationship between the low front vowel /æ/ and the low back vowel /ɑː/; the status of the vowels represented by the pair *caught* and *cot*; the realisations of syllable-rhyme-r. A phonological description of each of these variables is given for both standard General American English and standard Southern British English. The phonological structure of these differences between the dialects is then highlighted. This thesis shows how these differences develop in the interdialect phonology and show how realisational differences develop differently than phonemic differences.

Acknowledgements

The Statement of Originality states that this thesis is my own work. That does not mean that I was alone in producing this thesis. Many people have contributed to the production of this thesis at every stage. I apologise in advance if I forget to mention somebody. However, I am still grateful to you for your assistance.

The first group of people I wish to thank are those that participated in this study. There are some people in this world that wouldn't be comfortable with a long-haired, bearded stranger invading their home to record their children. To respect the privacy of the families, I have not listed their names here, but please know that without you, I simply could not have done this thesis.

There are several individuals and organisations that helped me find these participants. My thanks is extended to them all. They include: Cathy Hurst, former principal officer of the United States Consulate General in Edinburgh; Faye Barnes, community liaison officer at the U.S. Embassy in London; the community liaison officers at the British Embassy in Washington, the British Consulates in Los Angeles and San Francisco, and the British High Commission in Ottawa; the American Women's Club of Surrey; the American Women's Club of Aberdeen; the American Women's Club of Berkshire and Surrey; the American Women's Club of central Scotland; Shane's colleague at Arizona State; those individuals that responded to my requests or passed on my requests that were posted to the Linguist List and to the American Dialect Society List.

There is an additional thanks to contributors to the American Dialect Society List. The only Americans I associate with regularly live in Edinburgh so have dialects that might have changed with exposure. The ADS helped clarify the status of certain phenomena in American varieties of English.

I'd like to thank Ludovica Serratrice, one of my office-mates, for the occasional conversation and for being the sounding board for some ideas. I'd also like to thank Iraide Ibarretxe, my other office-mate, for the lengthy conversations, for keeping me in supply of coffee, and for her friendship.

In my first year, it felt like I tried every member of the linguistics department at Edinburgh University as a supervisor. Many people have read drafts of papers and chapters or have given me ideas to follow up or references to read. The people include: Jim Miller; Antonella Sorace; Carolyn Heycock. I was helped by Ellen Bard and Cathy Sotillo with my statistical analyses, and for that I am indebted because I just can't understand the numbers. In the last year and a bit, Mits Ota has been a member of the linguistics department. Discussions – sometime heated discussions – with Mits always made me think and certainly made an improvement on some of my analyses. I'd like to thank Ronnie Cann, even though phonetics and phonology are "all just noise" to him. Ronnie has supervised this thesis from the beginning and despite the noise, his input has strengthened this thesis. I'd also like to thank Heinz Giegerich. He, too, has helped me strengthen the arguments of my thesis, particularly the phonological analyses. He continued to help me even though he was going through some rough times, and for that I am even more grateful.

Various members of my family have helped put my thesis into perspective. My father, Joe, paid for the computer and the printer on which most of the work of this thesis was done. My mother, Kathy, offered her love, moral support, opinion and prayers in abundance, as well as made sure I had enough warm clothes to wear in this colder climate. Conversations and arguments with my oldest brother, Shane, made me realise the value of doing a thesis and the importance of enjoying life outside of academia. My older brother, Jason, helped me realise how precious life and family are and how I should value both above anything else. I just wish he hadn't scared everybody in giving that lesson.

Several people offered couches or even beds to sleep on while I was traipsing about the UK and North America collecting data, thus saving me lots of accommodation expenses. These people are: Danaë Theobald; Doug Kunz; Mr. and Mrs. Molloy; Ken and Tina Stewart. Included in this list would be Ken and Tricia Stewart, who have made several other contributions to this thesis: the use of their car; the copious food and drink; another warm and loving family to be a part of and spend holidays with.

I would like to give a huge hug and thanks to my wife, Allison Stewart. She made sure I didn't starve. She was one of the main incentives to start my Ph.D. at the University of Edinburgh. She put up with me, even though I would come home late at night tired and grumpy from researching, writing, suffering writer's block, and fighting my computer. She has tholed being married to a Ph.D. student heavily in debt, which is more than a lot of people can handle. She has made sure I always have a proper home to come to. Thank you, Allison, for being there. I also wish to acknowledge Panda, who was a gift from Allison and who often communicated my frazzled thoughts to Allison since I was in no state to speak coherently after a long day working.

Lastly, I'd like to thank God. I know I put in a lot of work in this thesis and I know there were a lot of people that made contributions. But I'm convinced someone or something divine - or at least far greater than me - had a hand in a lot of this.

My heartfelt gratitude to all of these people. Without them, this thesis would simply be no more than a half-baked idea. However, any errors or weaknesses of this thesis continue to be mine alone.

Edinburgh, December 2000

Acknowledgements to the re-submitted edition

Some of my colleagues at Philips Speech Processing Dictation Software in Vienna helped me with the production of this corrected thesis. I'd like to thank Oliver Ratschka for helping me teach myself LaTeX as well as proofreading. I'd also like to thank my head of department, Alexander Kolnerberger, for occasionally reminding me that I should be working on my thesis corrections and for allowing me the flexibility to do so.

The comments and suggestions made by my examiners Linda Shokey and Charles Jones have made this thesis much more solid, stronger and, I hope, more readable. Of course, I would like to thank the continuing support from my thesis supervisors, as well, for making sure I addressed my examiners' comments and suggestions.

At the University of Vienna, several people at the Department of British and American studies were helpful. Ute Smit and Julia Hüttner for pointing me in the direction of the department's library (sometimes literally). Once I was in the library, Dr. Harald Mittermann was kind enough to grant me lending privileges and offer suggestions when I couldn't find the sources I needed.

Once again, my heartfelt thanks, gratitude and love to Allison. After years of coming home grumbling about the thesis, I've had to come home grumbling about work and then start working on the grumble-causing thesis. Not only that, she helped proofread the final edition. I've devoted too much time on my computer working and pretending to work on the thesis. It would be understandable if my wife were jealous of the thesis since I have spent more of my time with it than with her. At last, the thesis is finished... one way or the other.

Vienna, November 2002

Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification except as specified.

(*Aaron E. Drews*)

To Allison

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Chapter 1

Introduction

1.1 Interdialect Phonology

This thesis focuses on interdialect phonology. Interdialect phonology is the study of the phonological system of speakers who have acquired some of the distinguishing features of a second dialect. An interdialect is the stage 'in between' speaking one's native dialect and talking like native speakers of a second dialect.

As the title of the thesis implies, an interdialect phonology exists in the context of second dialect acquisition. There have been a few studies on the acquisition of the phonology of a second dialect[1]. These studies concentrate on the whole of the acquisition process and how well the experiments' participants succeed in acquiring the second dialect. These are important areas upon which to concentrate, especially considering that there is dearth of research focusing on the acquisition of a second dialect phonology in a naturalistic setting. This thesis pursues similar goals as a continuation of the research on dialect acquisition. That is, the acquisition process and the success of acquisition by individuals are examined. However, the main focus of this thesis is on the phonological organisation and structure of an interdialect itself. In the handful of previous studies, the interdialect has been a means to an end, so much so that there is no term for the interdialect other than perhaps "the learner's dialect" (Chambers 1992, passim; Payne 1980, passim) or a "developing competence". In this thesis, the study of the interdialect – particularly the study of what is commonly referred to as the 'mid-Atlantic dialect' – is an end unto itself.

[1] These studies are reviewed in the following chapter.

The 'mid-Atlantic dialect' is an example of an interdialect and provides the corpus of data to be examined. Some actors and other entertainers have been described as speaking with a mid-Atlantic accent [2]. The American Dialect Society had a brief e-mail discussion about the mid-Atlantic dialect[3]. Obviously, linguists and laity alike know of the mid-Atlantic dialect, at least as a convenient label. Yet the mid-Atlantic dialect is a variety[4] that has not been explored very much. There are hundreds of studies examining the acquisition of English by speakers of other languages. There are also many articles and books about English speakers acquiring other languages. These studies are by-products of modern mobility. The American Women's Club of Surrey and the Aberdeen International School are also by-products of modern mobility. These institutions are comprised of American expatriates, many of whom have partially acquired a second dialect. All of the families that have participated in this study have made a transatlantic move because of the global aspect of finance, oil, technology, diplomacy and military. Studying native speakers of English acquiring another variety of English may not be as exotic as studying the acquisition of Xhosa clicks, but there is a body of data that is largely being ignored.

Studying this body of data – the mid-Atlantic dialect – reveals some interesting points about the standard varieties of English that may have escaped notice in a 'mono-dialectal' perspective. These interesting points and the exposition of the mid-Atlantic dialect are discussed throughout this thesis.

1.2 Dialect

Language and dialect can be defined in terms of idiolect. An idiolect is the linguistic competence, "the totality of speech habits of a single person at a given time" (Hockett 1958, 321).

Hockett defines a language as "a collection of more or less similar idiolects" (1958, 322). Hockett states that a dialect is defined the same as a language except that "when both terms are used in a single discussion, the degree of similarity of the idiolects in a single dialect is presumed to be greater than that of all the idiolects in a language" (1958, 322).

[2]For example, in the September 2000 issue of the Telewest Cable Guide, actress Jane Leeves is described as having "a kind of mid-Atlantic twang, American West Coast vowels having invaded her native Sussex accent" (p. 2).

[3]For example, in the ADS e-mail list, there were brief discussions on the mid-Atlantic dialect in October 1997 and from December 1999 to January 2000.

[4]'Variety' is a neutral term used to signify any linguistic entity such as a dialect or a language.

This thesis extends the definition of 'a group of closely related idiolects' and applies it to accent as well as language and dialect. With the extension of this definition to 'dialect', Hockett stipulates a greater degree of similarity within the idiolects. With the extension of the definition to 'accent', it is stipulated that the degree of similarity within the idiolects of an accent is even greater[5].

Following these definitions to the letter, no one can speak a dialect or an accent. By claiming to speak a dialect, what is meant is that one speaks one of the idiolects of which the stated dialect is comprised. Following slightly looser interpretations of the above definitions, a dialect is a socially or regionally defined group of closely related idiolects (Crystal 1997, 114-115).

For the purposes of this thesis, dialects are regional varieties. The region is generally delimited by political or geographical boundaries. For example, in North America, the United States and Canada are separate political entities. Linguistically, however, any differences between standard English in Canada and standard English in the United States is negligible, at least with regard to this thesis[6]. On the other hand, in Britain, the border between Scotland and England is both political and linguistic[7] Often, dialect boundaries do not follow political boundaries. In this thesis, a geographical boundary – namely, the Atlantic Ocean – sufficiently divides the varieties of English in North America and in England. This is a simple definition of dialect. A more precise and detailed definition would be required for neighbouring (geographic or social) varieties, and to differentiate between dialect and language. However, the simple definition is adequate for the type of analyses and discussions presented in this thesis.

This thesis concentrates on phonology and phonetics. Variation in the sound system is usually classified as 'accent' (Crystal 1997, 2). Two similar varieties that differ in more than just the sound system – e.g. in the morphosyntax or the semantics – are usually referred to as two dialects of the same language (Crystal 1997, 114-115). The two main varieties of English studied in this thesis are General American (GA) and Southern British English (SBrE) (see the following section for an exposition on these varieties). These two varieties differ almost

[5]Instead of extending this definition to 'accent', it is possible to have classified the two varieties under investigation in this thesis as 'languages', and smaller groups within these languages could have been classified as 'dialects'. However, classifying two standard varieties of English as two different languages was discounted as absurd (cf. Mencken 1936, 1-12). Additionally, such classification would have put this thesis into the realm of second language acquisition which is not quite the case. Instead, it was decided to extend Hockett's definition to the term 'accent'

[6]There is some marked dialect diversity in the Maritime Provinces in the east of Canada. Obviously, the English of Quebec and Francophone Canada is excluded from this discussion.

[7]Ironically, Weinreich's statement that "a language is a dialect with an army and a navy" has an opposite result in these cases.

exclusively in their sound systems. There are a few morphosyntactic differences and there are some semantic differences, namely different lexemes for the same item. GA and SBrE are essentially two accents of standard English, given Crystal's definition of 'accent'.

However, the study upon which this thesis was originally founded (Chambers 1992, reviewed in the following chapter) is entitled "Dialect Acquisition". Other studies that examine the same general theme bear similar titles: "Factors Controlling the Acquisition of the Philadelphia Dialect..." (Payne 1980); "The Acquisition of the Phonological Features of a Second Dialect" (David 1985) (both reviewed in the following chapter). All of these studies concentrate on phonological acquisition. All of these studies are also written following Hockett's definition of dialect. Hockett's definition does not distinguish between phonology/phonetic similarities and morphosyntactic or semantic ones. The differences between General Indian English and GA or between Northern Cities English and Philadelphia English might (or might not) vary at more than just the phonological level. Regardless, in Payne's study, the group of closely related idiolects that form Northern Cities English is not a part of the group of idiolects that comprise Philadelphia English and both groups are, therefore, considered different dialects in that study. By the same token, GA is not a part of the group of idiolects comprising SBrE and *vice versa* – if only on the phonological level – and thus both groups are different dialects. The definition of 'dialect' followed in this thesis is following the precedent establish by other similar studies on dialect acquisition.

The definitions of General American and Southern British English outlined in the next section cover a very broad range of idiolects. Included as part of General American, for example, are the two different accents of the Northern Cities and of Philadelphia. In this thesis, however, the term 'dialect', as defined by Hockett, is reserved specifically for comparing GA and SBrE. Additionally, the term 'variety', also defined above, is a very general term referring to any linguistic entity. As a compromise, this thesis extends Hockett's definition of 'language' and 'dialect' to 'accent'. The term 'accent' refers to intra-dialectal varieties, regardless if the variation is due to differences in phonetic implementation of a shared phonology or due to morphosyntactic differences. Although the definition of 'accent' derived from Hockett differs from the conventional definition, it is not meant to argue against the conventional definition (Crystal 1997, 2). Instead, the definition of 'accent' based on closely related idiolects is meant to facilitate discussions later on in this thesis and is also meant to avoid confusion with the terms 'dialect' and 'variety'. In this thesis, accent is to dialect as dialect is to language.

1.3 The Reference Dialects

There are two main dialects of English used as referents in this study: standard Southern British English (SBrE) – sometimes referred to as 'Received Pronunciation' (RP) – and General American English (GA). There are several reasons why these two varieties are used.

The main reason is that these two dialects of English are well documented: e.g. Wells 1982 and Giegerich 1992. Both dialects are also standard varieties in that they are not associated with any one specific region. The mobility outlined above implies a middle-class background. Standard dialects tend to be associated with the middle class (Wells 1982, 13f.). It was assumed that this class-to-accent relationship also applies in second dialect acquisition. This is borne out in the data. Not only do most of the participants speak a standard variety as their native dialect, the data indicate that the target for the participants was also a standard variety.

A second reason why these two standard varieties are used as references is that a range of phonological phenomena can be studied. Payne (1980) details how complicated phonological features of a second dialect are acquired – specifically the short 'a' of the Philadelphia accent[8]. However, Payne does not discuss 'low-level' or simple phonological and phonetic differences in much detail. There are several types of complex phonological differences: numerous exceptions to a rule; unrelated environments governing the same underlying representation; an opaque relationship between input and output (Chambers 1992, 683-684). In simple phonological differences, the relationship between input and output is more transparent, there are fewer, if any, exceptions, the input and/or the governing environments form a natural relationship or a natural class (Chambers 1992, 682-683). In this thesis, the acquisition of these simpler phonological phenomena and how they interact in the interdialect is examined along with more complicated phenomena.

Lastly, finding native speakers of these dialects living in other English-speaking countries was thought to be relatively easy, especially with today's multi-national corporations. This thesis examines the speech of Americans living in England and of English living in North America. Although the search was not easy, enough participants were found to make a reasonably balanced study. The initial intention of this thesis was to include Americans living in Scotland and Scots living in North America as well. Unfortunately, few North American

[8] Payne's study is reviewed in section 2.7.2, below.

families living in Scotland met the appropriate criteria [9] for inclusion in this study. There were no Scottish families at all found in North America that could participate in this study[10].

1.3.1 General American

American English is most diverse along the Atlantic coast – the areas settled for the longest time. General American is usually considered to be all rhotic accents of English spoken in the United States (Hartman 1985, xliv,lviii; Giegerich 1992, 47-48,64). Such definition, then, excludes the accents of the urban and maritime northeast as well as those of the south. Given such a large geographic area, there is some accent variation, even in the 'standard' General American. The two most distinguishing phonological features of GA are, as already mentioned, rhoticity and the "ubiquitous" tapping of medial /t/ (Chambers 1992, 682), both of which are discussed in detail later in the thesis[11].

GA is sometimes called 'network' or 'broadcast' English, referring to the English used by the news-readers of nation-wide television (and radio) networks[12]. For the purposes of this thesis, General American also includes the English spoken in (Anglophone) Canada. Trying to refer to a 'broadcast standard' has some problems. Besides nation-wide network media, there are also regional media with news-readers from the general broadcast region, and hence there are regional standards. Referring to General American as a single, regionless, classless, accent is more a convention than a reality.

Despite these accentual variations and large geographic distribution, General American is relatively homogeneous. A speaker from Indiana will not speak markedly differently than a speaker from Washington: they will both be rhotic; they will both tap intervocalic /t/; they will have largely the same vowel categories and contrasts. GA is not the dialect of any specific region, noting the negatively-defined exceptions of non-eastern and non-southern previously detailed. The accentual variation and regional standards are all remarkably similar: the "internal variation is mainly a matter of differences in the phonetic realisation of a system of phonemes that is by and large shared by all GA speakers" (Giegerich 1992, 47; see also Wells 1982, 118 and Hartman 1985, xliv). In this thesis, General American refers to the common phonemic system – or underlying system of sound categories – that is shared by all of these similar varieties.

[9] These criteria are explained in section 3.2.

[10] Obviously there are many Canadians and Americans that claim Scottish ancestry. However, there were no recent immigrants found.

[11] Tapping is discussed in chapter 4 and rhoticity in chapter 7

[12] It should be noted that two anchormen of American national media are, in fact, Canadian.

One notable exception to this homogeneity concerns the vowels of the THOUGHT/CLOTH and LOT lexical sets. Some speakers have merged these two vowels so that pairs like *Don/dawn* and *cot/caught* are homonyms. For other speakers, these examples form minimal pairs[13]. The accents that have a merged THOUGHT ~ LOT are referred to as 'modified GA'. The accents that maintain a distinction between the vowels are referred to as 'standard GA' or 'normal GA'. The definitions of 'modified GA' and 'standard' GA are made here in order to facilitate any discussion regarding this phenomenon prior to chapter 6.

GA is not specifically associated with any socio-economic class. Being a standard variety, it is a sociolinguistic coincidence that GA is the accent spoken by educated, white-collar, middle-class speakers, but not exclusively so. Speakers of various socio-economic classes speak GA. There is no overt social prestige or stigma attached to GA. Speakers of American varieties of English are probably more aware of regional distinctions – e.g. 'southern' or 'eastern' – or varieties associated with ethnic groups – e.g. African American Vernacular English or Chicano English – than they are of class-based accent variation[14].

There was never a centralised, prestige variety upon which to model a standard as there was in England. With the westward migration during the 19th century, the distinct accent boundaries of the eastern seaboard became blurred as speakers from the east coast – as well as immigrants from Ireland and Britain – intermingled (Dillard 1980; Trudgill 1986; see also Trudgill et al. 2000 on dialect formation). This pidgin of sorts has become modern General American.

The American expatriate participants living in Britain all speak GA as their native dialect. There is some variation with respect to regional accent, although nothing significant. Should the regional variation influence any of the analyses, it is discussed as necessary.

1.3.2 Southern British English

Received Pronunciation used to be – and largely still is – a sociolect. A sociolect is a dialect defined by socio-economic status. RP used to be associated with the aristocracy and the upper classes. It was the standard taught and spoken in English public schools[15]. RP is often associated with graduates of Oxford and Cambridge Universities. Pupils and students that attended these institutions were often from privileged backgrounds and came from all over

[13] The full details of this phenomenon are discussed in chapter 6

[14] This is not to say that class, region and ethnicity are all mutually exclusive. However, in North America there seems to be more linguistic awareness and association with the latter two categories.

[15] For the American audience, an English 'public school' is, in fact, a private, fee-paying boarding school.

England. The wide geographic distribution of public school pupils, Oxbridge graduates and aristocrats made RP a regionless dialect. Wells (1982, 279-282) refers to this type of RP as 'upper-crust RP' or U-RP, also called 'Oxford English' and 'conservative RP' by various authors and the 'Queen's English' colloquially.

Most of England's wealth and population is centred around London and the south-east of England. More importantly, most of Britain's national media – namely the BBC – is based in or near London. RP – or Wells's U-RP – used to be associated with educated speakers from London and the Home Counties. Many people today still make the association. So, there is some sort of geographic association for RP.

However, RP is not restricted to the south-east of England. Education is no longer limited to the upper classes. Hence, RP is no longer spoken by just the aristocracy and Oxbridge graduates. Middle-class speakers also speak RP in Scotland and Wales as well as England. However, some class association still remains with the the term 'RP'. To account for this wide-spread use of a standard accent, many terms have been suggested as an alternative to 'RP': BBC English, Southern British Standard, Public School English, etc. This thesis uses the term Southern British English (SBrE).

All of these terms have come to mean the variety of English "which remains generally acceptable and intelligible within Britain" (Jones 1997, v). This definition remains vague. Today, most educated speech has become 'acceptable and intelligible', but still spoken with some sort of a regional accent. Like GA, there may be variation in the phonetic implementation of an underlying system of abstract sound categories that is shared by these various accents.

For the purposes of this thesis, SBrE refers to the group of non-rhotic, standard accents that is generally acceptable and intelligible within Britain. SBrE refers to the common system of underlying sound categories and the similar phonetic implementation shared by these varieties. This definition also excludes any overt or stigmatised regionalisms such as h-dropping, labialisation of interdental fricatives and rhoticness.

This is a very broad definition. It is meant to incorporate more than just the regionless, class-based Upper Crust RP. This broad definition is intended to include speakers that normally would not claim to speak RP, but who are educated, non-rhotic and produce few regionalisms[16].

This broad definition of SBrE includes Estuary English. Estuary English is a term used by the media and non-linguists (Shockey, p.c.) to refer to a regional standard developing around the greater London area. Estuary English has some features of popular London speech

[16] One reason these people do not claim to speak RP is because of its class associations.

(Cockney) and is not considered as prestigious as RP. Yet Estuary does not carry all of the social baggage (good and bad) of RP. Estuary English seems to be the new 'standard' which many upwardly mobile migrants to London are trying to achieve (Rosewarne 1994; Richards 1996; Tollfree 1999; Cruttenden 2001, 87-88; see also Wells 1982, 301-334 regarding 'popular London').

The definition of SBrE used in this thesis excludes West Country English, spoken in Bristol and the southwest of England. West Country English differs from most other varieties of Southern British English in that it is rhotic. There are other differences in accent as well, such as a different lexical distribution for some vowels and a different phonetic realisation of other sounds. West Country English is only mentioned because it is the first dialect of some of the participants of this study.

Most of the native English participants speak SBrE, as it is defined here, with the notable West Country exceptions. In addition, all of the American expatriates living in England used in this study live in the London area. Therefore, the target accent of any concern here is SBrE[17].

1.4 Conventions

For phonetic transcriptions as well as transcriptions of underlying phonological or lexical representations, this thesis closely follows the 1996 conventions of the International Phonetic Alphabet, with one notable exception. In this thesis, [r] represents a central, alveolar approximant, normally [ɹ] in the IPA. In addition to the IPA, standard phonological conventions are followed: transcriptions of underlying representations are within slashes or obliques – e.g. /fo'nimɪk/; square brackets are used for surface representations – e.g. [fə'nɛ.rɪk] – as well as for representations intermediate to underlying and surface representation within a phonological derivation. That is, if there are multiple rules that can apply to a given string, the output of those rules are transcribed in square brackets.

Additionally, rounded brackets or parentheses are used as an extension of a broad phonemic transcription, what Labov calls 'sociolinguistic variables'. A graph within rounded brackets – for example (r) – represents a phoneme or an underlying segment. However, the sound represented within the rounded brackets may differ between two varieties. In the varieties of English in New York City, (r) in syllable rhyme position, is a sociolinguistic variable: (r) represents /r/ in the rhotic varieties of New York City English; in the non-rhotic varieties,

[17] Estuary English may be of concern, but it is entailed in the definition of SBrE.

(r) represents a series of other sounds that correspond to /r/ in the rhotic varieties[18]. A sociolinguistic variable is one in which there may be a wide range of underlying representations across many dialects or accents. It is used in this thesis to represent one phonological variable from the perspectives of both native GA speakers acquiring SBrE and native SBrE speakers acquiring GA.

The other main transcription method used in this thesis is lexical sets. These standard lexical sets are based on Wells (1982). The lexical sets are not "part of any speaker's competence" (Wells 1982, 72), but a linguist's construct that "enables one to refer concisely to large groups of words which tend to share the same vowel, and to the vowel which they share" (Wells 1982, xvii).

Lexical Set	SBrE	GA	Examples
FLEECE	iː	iː	creep, speak, leave, feel, key, people ...
KIT	ɪ	ɪ	ship, sick, bridge, milk, myth, busy...
FACE	eː	eː	tape, cake, raid, veil, steak, day ...
DRESS	ɛ	ɛ	step, neck, edge, shelf, friend, ready...
TRAP	æ	æ	tap, back, badge, scalp, hand, cancel ...
GOOSE	uː	uː	loop, shoot, tomb, mute, huge, view ...
FOOT	ʊ	ʊ	put, bush, full, good, look, wolf ...
GOAT	oː	oː	soap, joke, home, know, so, roll ...
STRUT	ʌ	ʌ	cup, suck, budge, pulse, trunk, blood ...
THOUGHT	ɔː	ɔː(ɑː)	taught, sauce, hawk, jaw, broad ...
CLOTH	ɒ	ɔː(ɑː)	cough, broth, cross, long, Boston ...
LOT	ɒ	ɑː	stop, sock, dodge, possible, quality ...
PALM	ɑː	ɑː	psalm, father, bra, spa, lager ...
BATH	ɑː	æ	staff, brass, ask, dance, sample, calf ...
NURSE	ɜː	ɜː	hurt, lurk, urge, burst, jerk, term ...
PRICE	aɪ	aɪ	ripe, write, arrive, high, try, buy ...
CHOICE	ɔɪ	ɔɪ	adroit, noise, join, toy, royal ...
MOUTH	aʊ	aʊ	out, house, loud, count, crowd, cow ...
NEAR	ɪə	ɪəʳ	beer, sincere, fear, beard, serum ...
SQUARE	ɛə	ɛəʳ	care, fair, pear, where, scarce, vary ...
START	ɑː	ɑəʳ	far, sharp, bark, carve, farm, heart ...
NORTH	ɔː	ɔəʳ	for, war, short, scorch, born, warm ...
FORCE	ɔː	(o əʳ)(ɔəʳ)	four, wore, sport, porch, borne, story ...
CURE	ʊə	ʊəʳ	poor, tourist, pure, plural, jury ...

Table 1.1: Underlying representation of GA and SBrE lexical sets (Wells 1982, xvii-xix)

By referring to the BATH set, there is no mistaking that the reference to is the /ɑː/ underlying vowel of SBrE and the /æ/ vowel of GA. Within these standard varieties, there is some variation, which has been marked in the underlying representations by brackets. For example, some accents of GA have a merged THOUGHT and LOT vowel. The bracketed (/ɑː/) of the THOUGHT

[18] A full discussion comparing rhotic GA and non-rhotic SBrE is presented in chapter 7, below.

set in the GA column suggests this alternative form. Further clarifications as to the segment under discussion is made as necessary. For more detailed lists of the member words of the lexical sets, the reader is referred to Wells (1982, 127-168).

There are several minor departures from Wells in the symbols listed in table 1.1. The first is the use of /ɚ/ as the second element in the NEAR, SQUARE, START, NORTH, FORCE and CURE sets of GA as opposed to /r/. The use of /ɚ/ in these sets is meant to visually draw parallels between SBrE and GA usage of (r). In SBrE, the vowels of these lexical sets are centring diphthongs. It is explained in chapter 7 that in GA, the rhotic element of these lexical sets is vowel-like and combines with the syllable nuclei to form rhotic centring diphthongs. The use of the symbol /ɚ/ is not meant to imply that the NEAR, SQUARE, START, NORTH, FORCE and CURE sets of GA are disyllabic. Instead /ɚ/ is used to emphasise the vowel-like quality of syllable-rhyme (r) in GA – as opposed to the consonantal quality implied by the symbol /r/ – and to illustrate the diphthongal quality of the vowels in the NEAR, SQUARE, START, NORTH, FORCE and CURE lexical sets.

The second departure from Wells's conventions is that the DRESS set is represented only by the mid, front lax vowel /ɛ/ in both GA and SBrE. The use of /ɛ/ follows, instead, the conventions used in Giegerich (1992) and Ladefoged (1993).

A third change to Wells's usage is the notation of length in GA. Wells states that "vowel length in general retains a somewhat greater importance in RP than in GenAm" (Wells 1982, 140). Length is denoted for GA in this thesis for two main reasons. The first reason is to simply *illuminate* the similarities between the two dialects since this thesis focuses on the differences. The second reason is to visually show that certain vowels form pairs in English – at least in GA and SBrE – with one member of each pair being long and the other member being short. However, these pairs differ in more than just length. There is also a qualitative difference between the members of the pairs. Non-low long vowels are tense and often realised as up-gliding diphthongs; short vowels are lax and monophthongal (Giegerich 1999, 173). The use of different symbols and a length marker make explicit that, although certain vowels form pairs, they differ in both quality and quantity. The fact that a long vowel has a different quality than a short vowel makes either the use of a different symbol or the length marker redundant. Using only one of the two conventions – with a proviso that either a different symbol or the length notation is redundant – is sufficient to highlight the difference. Nevertheless, in this thesis, explicitness is preferred even if it is at the cost of redundancy (see Giegerich 1992, 69ff. for similar justification for a slightly different transcription convention). The different symbols

indicate a difference in quality. The length marker shows a difference in quantity. Additionally, the length marker acts as a visual aid to the paired distribution of certain vowels.

1.5 Hypotheses, Goals and Aims

There are several aims of this thesis. The literature upon which these goals and hypotheses are founded is reviewed in the following chapter. In the context of an introductory chapter, the aims are simply presented with only minor elaboration.

The first goal of this thesis is to explore the composition of an interdialectal phonology. Although an interdialect is the result of (ongoing) dialect acquisition[19], acquisition is only one aspect of studying interdialect phonology. This thesis explores other aspects of the interdialect as well. For example, how the interdialect relates to the native dialect and how it functions as the second dialectal competence. The thesis examines how an interdialect is initially formed, how it develops with further acquisition, how some parts of the interdialectal phonology easily change and others are more resistant to change. The data are the driving force behind this goal and this thesis. Examples of individuals' interdialectal phonologies highlight the discoveries made during the exploration of the interdialect. The three main studies that look at the acquisition of a second dialect of English (Chambers 1992; David 1985; Payne 1980) have a primary focus on explaining acquisition. Discussion of dialect acquisition is inevitable, but this thesis focuses on several aspects of the interdialect, with particular concentration on the composition of the interdialectal phonology. The primary aim of this thesis is the exploration of the data, rather than using the data to support or justify a specific theory or hypothesis.

Obviously, certain theories and hypotheses were in mind when the data was collected and examined for this thesis. These other hypotheses form the secondary goals of this thesis. Undoubtedly, these secondary goals are related to the primary goal – the exploration of interdialect phonology. However, the secondary goals are also more concrete than the main aim.

One of the secondary aims of this thesis is to emphasise the role of the first dialect in the development of the interdialectal phonology. It is hypothesised that a second dialect is primarily acquired by manipulating first dialect structures. None of the previous studies on the acquisition of a second dialect of English have explicitly made this claim. Chambers's concepts of 'old rules' and 'new rules' (see (10) in section 2.7.3) vaguely allude to the manipulation of D1 structures. Also, Payne's (1980) contrastive analysis of the various accents

[19] The title of this thesis implies that interdialect development is a part of dialect acquisition.

of American English also suggests the manipulation of native dialect structures, as do her terms of 're-organising' and 're-structuring'. Again, though, an explicit statement is lacking.

It will be argued that an interdialect is formed and developed[20] by maximal manipulation of the first dialect forms and structures. If an entire phonological structure is the same between the first dialect and the target – for example, the assimilation of the place of articulation of nasal stops followed by an obstruent (Giegerich 1992, 244f.) – then the whole structure regarding nasal assimilation is incorporated into the interdialect and the D2 target is essentially acquired. Since dialects, as defined here, are so similar, this is nearly a tautological example of maximal manipulation of the first dialect.

But when there are differences, the D1 structures are still used as much as possible as the basis for interdialectal development. Chapter 4, for example, shows how native GA speakers acquiring SBrE medial /t/ do not acquire a new rule, but instead use the existing D1 underlying input and only slightly manipulate the existing D1 rule governing the underlying sound in medial position in order to acquire the D2 output.

In order to find out what first dialect structures are manipulated in the interdialect, a comparison of the two dialects must be made. This is reminiscent of the Contrastive Analysis Hypothesis, whose basic premise is to "get the best matching description that can be found of the two varieties and compare and contrast" (Lado 1957, 67) (see section 2.1.3). The Contrastive Analysis Hypothesis proper works under the assumption that learners' difficulties in acquiring a second language can be predicted and ultimately overcome by a thorough comparison and contrast between a learner's L1 and the target language. This thesis employs a contrastive analysis. Such analysis is used to predict the difference between the dialects rather than to predict the difficulties that might be encountered by the dialect learner. In this thesis, the range of difficulty is, instead, predicted by the nature of the difference of the phonological structure of the given datum.

The last main goal of this thesis is to show how some phonological differences are more susceptible to change in the interdialect while other difference are more resilient to change. In other words, the degree of difficulty depends on the phonological structure[21]. This thesis follows a basic generative framework. A phoneme or underlying representation serves as the

[20] That is, a second dialect is acquired.

[21] The term 'difficulty' is used with caution here. From personal experience, the author has noted that 'difficulty' is relative to the individual learner regarding different languages and different aspects of one language. To say a phonological structure is difficult or easy would be to assume to know an individual's learning preferences. By the same token, some phonological differences are acquired by most of the participants examined in this study while other phonological structures show only limited change towards a D2-like production in interdialectal development. This suggests a degree of difficulty, but the term 'difficult' remains undesirable.

input to a rule or a series of rules. The rules transform the abstract input depending on the input's location within the syllable, the segments neighbouring the input within a string of consonants and vowels, or the placement of stress or other such phonological interactions. The result of the transformation is the concrete realisational or phonetic output – what is actually uttered by a speaker. It is predicted that phonological structures that differ only in the phonetic output – where the underlying sound and the basic structure of the rule governing that underlyer are the same – are the most susceptible to interdialectal change and therefore the most likely D2 targets to be acquired. Rule-based differences – either a difference in a rule that is shared, for the most part, by the two dialects or a rule that can predict a difference between the dialects – are less likely to undergo interdialectal change and thus less likely to be acquired. The differences that are the least likely to go through any interdialectal development and change are underlying differences, in part because at the underlying level there are fewer D1 structures that can be exploited in the interdialectal development process. An underlying difference is usually a difference in the underlying inventories of sounds, but also differences in parallel underlying segments that are not the same between the two varieties, i.e. the sounds regarding syllable-rhyme /r/ (see chapter 7).

This thesis presents a contrastive analysis of four phonological differences between GA and SBrE using a basic generative description for the comparison and contrast. The four phonological differences are: medial (t); the [back] value of the vowel of the BATH lexical set; the presence or absence of a distinction between the THOUGHT and LOT sounds; lastly, the difference regarding (r) in syllable-rhyme position[22]. Based on the contrastive analysis, the interdialectal data is explored. The data show why a particular contrastive analysis was made. The data also demonstrate how some phonological differences are more likely the undergo interdialectal change than others.

In summary, the first goal of this thesis is to explore the composition and behaviour of interdialectal phonology. This thesis shows how first dialect phonological structures are maximally manipulated and exploited while emphasising the role of the first dialect by way of a contrastive analysis. Lastly, it is demonstrated that the phonological structure of a difference between two dialects is predictive of the amount of phonological change and the degree of success in the acquisition of the target structure. As was mentioned earlier, the foundations underlying these goals, aims and hypotheses are outlined in details in the following chapter, with a particular emphasis on studies of the acquisition of a second dialect of English.

[22] In other words, rhoticity vs. non-rhoticity.

Chapter 2

Literature Review and Hypotheses

2.1 Defining Interdialect Phonology

The first goal of this thesis is to describe and explain interdialect phonology using the phonology of the Mid-Atlantic dialect as a reference point. The mid-Atlantic is not an actual dialect or accent. The name does not refer to the accent spoken in the middle Atlantic states of the U.S. 'Mid-Atlantic' is a conventional term describing the speech patterns of British (usually English) expatriates living in North America, or North American expatriates living in the U.K.

The mid-Atlantic dialect has some phonological features from both General American English and Southern British English. Some phonological features of the mid-Atlantic dialect might not be attributable to either of these two major varieties. Sometimes innovations occur in the interdialect. These innovations might not completely match the target, but at the same time, they might not be derived from the first dialect.

An interdialect is a dialect 'in between' the native dialect of a particular speaker and the target dialect. The notion of 'interdialect' is based strongly on the notion of 'interlanguage' developed in Selinker (1972, 1992).

Trudgill (1986, 62ff.) appears to be the first to use the term 'interdialect' based on Selinker's (1972) description of interlanguage. The word 'interdialect' was adopted for this thesis also based on Selinker (1972) and other SLA literature. The word 'interdialect' was 'coined' for this thesis prior to consultation with Trudgill (1986). Trudgill uses the term interdialect to "refer to situations where contact between two dialects leads to the development of forms that actually originally occurred in neither dialect" ultimately leading to "the process of dialect formation" (1986, 62). Trudgill's use of the term is very similar to the use adhered to

in this thesis, except that Trudgill intentions are for long-term, multi-generational development of geographical dialect contact situations. In this thesis, the term is applied to the idiolect of individuals surrounded by a new dialect environment. The term, as implied in the title of this thesis, is intended to describe an individual's process of dialect acquisition as opposed to Trudgill's process of geographic dialect formation.

2.1.1 Interlanguage and Review of Selinker

An interlanguage is a linguistic system separate and independent from the native language used as a learning device for second language acquirers. The interlanguage is constantly undergoing change as a speaker is exposed to and acquires the second language. The interlanguage functions as the second language.

Selinker (1972) assumes that only a small percentage of second language learners acquire a completely native-like second language. Selinker's assumption certainly seems applicable to those areas where bilingualism is not the norm. Defining 'completely native-like' is something of a difficult issue (White and Genessee 1996; Bialystok 1997). Interlanguage helps account for the 'lack of success' in the majority of language learners. The interlanguage might never completely match the second language, but it can provide a wealth of performance data, showing how second (and subsequent) languages are acquired. By comparing observable interlanguage data with observable and documented native production of the target variety, the status of the interlanguage can be compared to the target without having to define 'successful acquisition'.

The second language learner must learn an entirely new system, more or less from scratch. There will be language transfer and fossilisation[23], but second language learners cannot completely rely on their native language for communication and acquisition.

2.1.2 Factors contributing to Interlanguage and Interdialect

Several factors contribute to the make-up of an interlanguage (Selinker 1972): language transfer; transfer of language training (teaching methods); transfer of (classroom) learning strategies; transfer of ('real life') communicative strategies; overgeneralisation of target structures. Fossilisation, which is part of language transfer, also contributes to interlanguage.

Because the dialect acquisition studied in this thesis occurs in a naturalistic environment, rather than a classroom environment, the factors of training and 'language learning' are treated

[23] Language transfer and fossilisation are explained below.

as irrelevant here. Dialects other than some sort of standard are seldom, if ever, the medium of classroom instruction. The main factors contributing to an interdialect then, are language transfer and overgeneralisation.

2.1.2.1 Language Transfer

Language transfer is the use of a linguistic form from the native variety while attempting to speak in the target variety (Selinker 1972, 215-216). It is the transfer of native language forms and structures into the interlanguage.

In second dialect acquisition, there is considerable overlap between the two codes since the two are varieties of the same language. It is presumed that the dialect learner is more likely to draw on their native competence more readily then the second language learner. Hence, dialect transfer is one of the largest contributing factors to an interdialect.

2.1.2.2 Overgeneralisation

Overgeneralisation is another factor contributing to an interlanguage (Selinker 1972, 217-218). Many phonological structures are complex[24]. A phonological structure is any relationship between underlying input and phonetic or realisational output (Giegerich 1992, 31ff.). The relationships between underlying categories system are also phonological structures[25].

Phonological complexity can arise from many sources. For example, there may be exceptions to a certain rule such as the *mad, bad, glad* 'set' of Philadelphia short-*a* (Payne 1980, 158)[26]. Another example of complexity can derive from unrelated environments governing the same underlying representation and an opaque relationship between these environments and the realisational output, such as found the in targeting the SBrE BATH vowel in dialect acquisition (Chambers 1992, 683)[27]. Another complexity can be caused by a distinction of underlying categories made in one dialect that is absent in another, such as the merged *caught* $\sim$ *cot* vowels in some accents of GA versus the distinction made in SBrE and in other accents of GA (Chambers 1992, 687-689)[28]. Yet another source of complexity for the dialect learner is the presence of two phonological rules with identical governing environments but with different levels of sociolinguistic acceptability and stigma, such as linking-r and

[24]Overgeneralisation can occur in morphology, syntax and semantics, too.

[25]The terms 'underlying category', 'realisation' and other phonological terms are defined in section 2.6.

[26]This is the simplest of the complexities of Philadelphia short-*a*. The core pattern, the exceptions and the environment in which Philadelphia short-*a* is variable is discussed in Payne (1980, 158-159)

[27]The BATH vowel is discussed in further detail in chapter 5.

[28]The *caught* $\sim$ *cot* vowels are discussed in further detail in chapter 6.

intrusive-r in SBrE (the phenomenon of the liaison of /r/ is – including the plausibility of positing two separate rules – is discussed in depth in Giegerich (1999, ch.7-8)[29].

A second language learner might not be successful in completely acquiring native competence of the target structure, particularly if the target is complex. Often an L2 learner acquires only the basic structure and applies it to all environments, regardless of there being an exception or a restricted environment in the target variety.

2.1.2.3 Transfer of Communicative Strategies

In order to communicate with native speakers of a target language, a language learner develops certain strategies. Speaking the target language only in the present tense may be one such example of a communicative strategy. From the viewpoint of the learner, such strategies are 'good enough to get by'. The resultant forms from communicative strategies can lead to non-native like 'L2' structures in the interlanguage (Selinker 1972, 219-220).

While transfer of communicative strategies is an important facet of interlanguage and probably interdialect, it is not discussed further. There is no way to determine the role of communicative strategies with the data that has been collected.

2.1.2.4 Fossilisation

Fossilisation is another important aspect of an interlanguage. "Fossilizable linguistic phenomena are linguistic items, rules, and subsystems which speakers of a particular NL will tend to keep in the IL relative to a particular TL" (Selinker 1972, 215). For example, (GA and SBrE) English voiceless plosives have a longer voice onset time in syllable onsets than do French voiceless plosives. Native speakers of English acquiring French have a tendency to have longer, L1-like VOTs in pronouncing French stops (Flege and Hillenbrand 1987)

Selinker argues that certain phenomena are more likely to fossilise no matter how young an acquirer is or how much second language experience a learner has. This is in contradiction to arguments presented by various proponents of the critical age hypothesis[30]. Following Selinker, it is proposed that certain phonological phenomena are more likely to fossilise than others.

An alternative and more generally accepted definition of fossilisation is "the cessation of acquisition before complete mastery of the grammar at a native speaker level" (Ioup and

[29] R-liaison is also discussed in chapter 7 of this thesis.

[30] The critical age hypothesis is briefly discussed in section 2.3.1, below.

Weinberger 1987, 420). At first, this definition seems to differ from Selinker's definition, which implies that fossilised structures are only from the native variety.

A fossil is any phenomenon that is not completely acquired. A fossil may be an L1 phenomenon that has not changed at all in the interlanguage – for example, longer voice onset times before voiceless consonants by native speakers of English acquiring French. A fossil might also be a phenomenon in which some change in the interlanguage or some partial acquisition – such as a voice onset time that is shorter than is found in native English, but longer than is found in the target of French. In fossilisation, the change never reaches native-like realisation of the target variety.

The combination of inflexible, unchanging fossilised phenomena with continual linguistic development and acquisition is what gives interlanguage its distinctive properties and is one of the aspects examined in this thesis. This thesis also aims to explore the roles of language transfer, overgeneralisation and fossilisation in the development of an interdialect.

2.1.3 Interlanguage and Contrastive Analysis

The interlanguage approach to second language acquisition grew out of the contrastive analysis hypothesis. The contrastive analysis hypothesis was effectively launched with the following quote:

> The most efficient materials are those that are based upon a scientific description of the language to be learned, carefully compared with a parallel description of the native language of the learner (Fries 1945, 9)

The general methodology of the Contrastive Analysis Hypothesis and the general methodology adopted in this thesis was best summed up by Lado: "get the best matching descriptions that can be found of two varieties and compare and contrast" (1957, 67).

Contrastive analysis assumes that language learners transfer forms and structures from their native language in the acquisition of the second language. An individual does not learn a second language holistically. Instead, an individual learns a second language by acquiring the differences between the L2 and the speaker's native language. Additionally, any errors a learner makes in the L2 can be attributed to cross-linguistic influence from L1 structures (Selinker 1992, 7; 1972, 215-216).

A focus on the defects of the original Contrastive Analysis Hypothesis "led to the ten-year effort (called the 'baby and bath water syndrome') of attempting to discard the entire enterprise of CA" (Selinker 1992, 11). It was discovered that some learner errors could be attributed to

developmental processes. This, then, showed that a second language is not acquired simply by learning the differences between the two varieties. However, since the 1970s, a comparative study of native and target language has again emerged as an important tool in the study of second language acquisition (Selinker 1992, 11). This can be seen in modern SLA literature such as Flege's Equivalence Classification Model and the derivatives thereof (Flege 1991; 1995; 1997). Additionally, the existence of Selinker's (1992) review of interlanguage and contrastive analysis show that the contrastive analysis hypothesis is still active in some form or another, even if some of the original details of Fries, Weinreich and Lado are not.

2.1.4 Interdialect

The concept of interdialect is very heavily based on that of interlanguage. Interlanguage and interdialect are both linguistic systems that function as a second variety. They both draw on the native competence by way of language transfer. Fossilisation and overgeneralisation are both active in the development of an interlanguage and an interdialect.

An interdialect, like an interlanguage, functions as a second linguistic competence. Because the IL/ID is only used for communication in the target variety, the IL/ID is, in one sense, independent of the native variety. Additionally, the IL/ID can continually develop its own linguistic structures. Sometimes these structures resemble the target variety; sometimes they resemble the native variety; and in some cases, structures in the IL/ID are not characteristic of either the native or the target varieties. This is where examination of the IL/ID must depart from a simple contrastive analysis.

Language transfer is one of the tenets of interlanguage[31]. It is argued in the following section that dialect transfer is fundamental in the initial foundation of the interdialect. Dialect transfer continues to influence the ongoing development of the interdialect. Because of this relationship between the interdialect and the native dialect, the interdialect is never totally independent of the native dialect.

Following the sense of 'independent' just outlined above for an interlanguage, this thesis treats the interdialect as independent. This is despite the high degree of overlap between the two linguistic systems.

The interdialect is treated as independent in order to study the interdialect in isolation. The actual independence of the interdialect probably varies from speaker to speaker. It is possible that one speaker is completely bi-dialectal, using the native dialect with speakers of the D1

[31] See section 2.1.2.1, above.

and the ID/D2 with speakers of the target variety; it is also possible that another speaker has an idiolect that has features from both native and target dialects[32] that is used in all occasions. This thesis analyses the interdialect of both types of speakers.

Two other concepts from the interlanguage model are significant in the study of an interdialect. The first is overgeneralisation. In the pilot study conducted for this thesis, some of the participants were targeting Scottish Standard English. One of these participants invariably produced a fricative for every orthographic occurrence of <ch> in the text. This is one example of overgeneralisation. For each of the phonological variables examined in this thesis, hypercorrection is possible: application of an interdialectal rule in too broad of an environment, for example; or making a distinction that a speaker knows exists in the target, but implementing the distinction incorrectly. Such examples of overgeneralisation are shown in the data analyses.

The last important concept that is shared between an interlanguage analysis and an interdialectal analysis is that of fossilisation. Whether because of age, phonological complexity or some sociolinguistic factor, any phonological phenomenon has the potential to fossilise[33]. The fossilisation can manifest as a pronunciation intermediate to the native and target expectations. A completely D1-like production of a given variable is another potential type of fossilisation. One of the aims of this thesis is to show that certain phonological variables are more likely to change in the interdialect than others. The converse of this hypothesis is that some phonological variables are more liable to fossilise than others. As with dialect transfer and overgeneralisation, the data analyses reveal the fossilisation of phonological variables in the interdialect.

2.2 The Role of the First Dialect in an Interdialect

2.2.1 The Initial Stages

It has been stated that GA and SBrE are standard dialects of English (Wells 1982; Giegerich 1992). As such, the two dialects are mutually intelligible. The common system shared by the two dialects – essentially what allows for mutual intelligibility – gives a second dialect learner communicative competence even before any acquisition has taken place. Communicative competence is defined here as the ability to understand and be understood while naturally speaking in the spoken target language.

[32] It is also possible that the dialect learner's idiolect has features found in neither the native nor target dialects.
[33] Actually, any linguistic phenomenon has the potential to fossilise.

In cases involving two, mutually intelligible standard dialects of English, it is assumed that the dialect learner already has communicative competence. It would be difficult not to assume communicative competence. For example, North American tourists come to Great Britain and British tourists go to North America often without any linguistic incidents. Although there may be occasional difficulties in comprehension and a degree of communicative accommodation in the tourist scenario, there is mutual understanding. Since trans-Atlantic tourists have little problem in communication, it stands to reason that trans-Atlantic expatriates have communicative competence.

Upon first exposure to the target dialect, a (potential) dialect learner might realise that there are differences between the native dialect and in what is spoken in the external environment. The dialect learner might not realise what, exactly, those differences are, though. Using the pre-existing communicative competence, the initial model of the interdialect entails a high degree of dialect transfer.

In second language acquisition, language transfer is the presence of a native language structure in the interlanguage (Selinker 1972, 215-216; 1992, 7). Since the notion of interdialect is based on the notion of interlanguage, then, by extension, dialect transfer is the presence of native dialect structures in the interdialect. Language transfer and, to some degree, dialect transfer are manifest by the utterance of a native form in communicating or attempting to communicate in the target variety – e.g. a 'foreign accent'.

Second dialect acquisition must start somewhere. Second language learners do not start with the luxury of communicative competence; perhaps a second language learner might have cognates and a similar syntactic structure. There is the possibility that second dialect learners acquire their target from scratch in a manner similar to second language learners acquiring a totally unrelated target such as a native Yoruba speaker acquiring French. It is more plausible to assume, though, that a dialect learner draws on existing linguistic knowledge. Since the dialect learner will have had no prior contact with the target dialect upon first exposure, the interdialect must initially rely very heavily on dialect transfer.

For second dialect learners acquiring a mutually intelligible target, there is inherent communicative competence upon which the interdialect can be built. Thus, it will be assumed that the initial shape of the interdialect is essentially a duplicate of the native dialect. Because of the exposure – however minimal – to the target variety the duplicate might not necessarily match the native variety totally. For example, linguistic accommodation might influence the initial acquisition process. Additionally, the interdialect is immediately subject to change and

development. There is no certainty as to the degree of difference between the initial interdialect and the native dialect. Regardless of accommodation or other linguistic influence, however, the initial interdialect will bear an almost identical resemblance to the native dialect.

Since the interdialect initially represents the native dialect so closely, it is argued that D1 underlying representations, structures, patterns, rules, constraints, etc. are exploited as much as possible. This type of linguistic manipulation does not preclude phonological innovations – the acquisition of 'new' D2 structures from scratch. Despite having a common language, there are some phonological phenomena that exist in the second dialect that have no counterpart in the first dialect and *vice versa*.

Additionally, the elimination of native dialect phenomena may also contribute to an interdialect. This elimination may come about through language attrition or because there is some sort of conflict with another phenomenon.

Chambers (1992, 695) predicts that "eliminating old rules occurs more rapidly than acquiring new ones". Chambers implies that elimination is an active part of the acquisition process. This thesis operates on the principle that there is no active elimination: all interdialectal change is some sort of acquisition. Even if the acquisition process equates to the loss of a native dialect structure, it will still be treated as acquisition in this thesis. So, for example, this thesis will examine native GA speakers acquiring a voiceless, alveolar stop [t] intervocalically and native SBrE speakers acquiring tapping. The former case – the GA speakers acquiring [t] – is the same as losing or suppressing the tapping rule that is native to GA, but this thesis will still refer to the 'acquisition of voiceless [t]'. The same idea holds true for native SBrE speakers acquiring rhoticity and native GA speakers acquiring non-rhoticity. Acquiring non-rhoticity equates to losing rhoticity, but the term 'acquiring non-rhoticity' will be used in this thesis. This terminology is a departure from guidelines established in the phonological theory followed in this thesis (see 2.5, below). In this thesis, 'loss' implies lack of activity. The active nature of interdialectal development, however, implies active acquisition as opposed to passive loss.

It is possible, however, to have passive elimination in the interdialect. Through continual use of a target structure, the native counterpart might atrophy from the grammar. This is essentially language attrition. Language attrition is the opposite of language acquisition: it is the loss of language through lack of use (Seliger and Vago 1991; Hansen 2001). This implies total use of the target structure at all times since the native structure never surfaces.

Any 'loss' of dialect structures will refer to attrition rather than active acquisition that reverses a D1 innovation. This idea will be expanded later in this chapter and in chapter 4.

It is proposed that of these three types of linguistic manipulation – innovation, elimination or alteration – alteration to existing structures is the most likely to occur. Additions and deletions to the interdialect are also manipulations of the native competence, but of a slightly different sort. The acquisition process includes additions and deletions, but most of the interdialect is proposed to develop from changing around existing phonological phenomena.

As an interdialect develops through the manipulation of native dialect forms, the target for acquisition is not the whole of the second dialect, *per se*: the bulk of the second dialect is already acquired by virtue of being the same language. Instead, the target is only the differences between the two dialects. This suggestion is very similar to how a second language was proposed to have been acquired under the Contrastive Analysis Hypothesis (see section 2.1.3). While the idealised target is the differences between the dialects, the actual target may be much less; depending on the speaker, only a few of the grossest differences might be targeted.

The motivation to acquire a second dialect and the degree of success that the learner sets as a goal – i.e. simply trying to be understood or complete acquisition (Shockey, p.c.) – varies from speaker to speaker. Therefore, the degree of interdialectal development after the initial formation of the interdialect will also vary from speaker to speaker.

2.2.2 Early Interdialect Development

With the interdialect initially resembling the native dialect very closely, it is impossible to determine which of the two systems the speaker draws on in the early stages. As the interdialect expands and develops, it is possible that the native dialect and the interdialect form a continuum of sorts. A larger competence containing both the D1 and the ID can account for several factors. First, there may be different 'dialectal' registers and potential register shifting/drifting. Secondly, a larger continuous competence not only allows for native-like D2 utterances and utterances intermediate to the D1 and the D2, but also D1 tokens since the newly acquired D2 forms exist alongside residual D1 forms.

Eventually the interdialect develops as an independent system. Nevertheless, that independent system still bears a remarkable similarity to the native dialect simply because the target bears remarkable similarity to the native dialect. Essentially, the interdialect is an expanded D1 competence in its least developed stages and possibly later. Even as the interdialect moves closer to the D2, there still may be residual traces of native dialectal forms.

Such a single, large competence would permit certain theory-internal ambiguity. The very nature of an interdialect dictates that such ambiguity must be permissible. The grammar cannot always predict which alternative will be uttered. Dialect acquisition is language change in progress. A change brought about by the acquisition process is not going to be immediate. Because a D2 phenomenon is acquired and is realised in the performance does not automatically mean that the corresponding D1 phenomenon is lost[34]. The acquisition process must allow for variation, even if the variation is sometimes unpredictable.

An interdialect can, for convenience, be thought of as a 'muddled' accent. This approach implies that in an interdialect there are neither D1 nor D2 forms. However, an interdialect can also include *both* D1 and D2 forms simultaneously, as well as the intermediate forms[35]. In language acquisition, there may be a lot of first language transfer in the interlanguage phonology[36]. In varying degrees, two languages differ in morphology, syntax and semantics. The two varieties of English under investigation by and large share the same morphology, syntax and semantics. There is even some overlap in the phonology. With such overlap between the ID and the D1, the output might not always be predictable.

A single interdialect competence that allows ambiguity can be illustrated with the pronunciation of *either*. Every native speaker of English knows that *either* can be pronounced in two ways. A given speaker may only produce one of the pronunciations in all situations, but does not find it odd if the other pronunciation is heard. The speaker has consistent performance, but also has a competence that allows for competing forms.

Like the *either* case, the output of the interdialect may not always be predictable from an internal perspective. An interdialectal grammar must allow this kind of internal ambiguity. The data show that competing forms surface, and sometimes unpredictably so. A certain amount of theory-internal ambiguity can account for this. Competing forms in the interdialect are generally due to 'allophonic variation'. The governing conditions may be linguistic – that is, adjacent segments or boundaries determine the output, for example. The conditioning environment might also be metalinguistic – for example, the social situation, the topic of conversation or the type of linguistic task, such as reading a story aloud or discussing that story. Although competing realisations of the same underlying form in the same linguistic context is possible, it is not expected to be the norm.

[34]This is one reason why the term 'acquisition' is used for both acquisition and apparent loss or suppression of a D1 structure.

[35]The examination of the data in subsequent chapters bears this out.

[36]Cf. 2.1.2.1, and Selinker 1972

The full degree of the interdialect phonological competence is not tested in this thesis. It would be impractical, if not impossible, to test the extent of an interlanguage or an interdialect – or indeed, of any language or dialect. Data was collected in only one setting. Even with the limited performance data, it is still possible to glimpse the larger competence.

2.2.3 The Independence of the First Dialect

This thesis examines the interdialect, essentially in isolation. It was stated earlier that the interdialect is a system that develops independently of the native dialect, even though the D1 provides the initial input in the foundation of the ID. This approach implies that there are, in effect, two separate linguistic systems that happen to share a strong link. However, it could also be argued that there is a single linguistic competence, an argument that is not explored in this thesis, but is worthy of further research.

In the early stages of the development of this thesis, one of the original intentions was to determine if there was a single dialectal system or two systems. The two-system approach assumes that the interdialect and the first dialect are independent of each other. A two-system hypothesis strongly parallels second language acquisition. What has been proposed above is that the first dialect is duplicated in the initial stages of second dialect acquisition, and subsequent changes affect the duplicate. These changes would leave the native dialect alone. Such a situation would bring about bi-dialectalism. Some participants of this study seemed bi-dialectal. The drawback to the two-system approach – assuming a carbon copy of the native competence – is that copying the whole of the native dialect seems a waste of cognitive space.

A single-system approach assumes that dialect acquisition affects the native competence. The interdialect and the native dialect would be the same system. A single phonological competence suggests that there is an intimate link between dialect acquisition (the addition of new forms into the native competence) and dialect attrition (the loss of native dialect forms through lack of use) (Seliger and Vago 1991; Hansen 2001). In a single-competence system, the acquisition of rhoticity implies the concurrent attrition of r-lessness; if one has acquired a merged for *cot* and *caught*, then the distinction will have been lost through attrition.

If dialect acquisition affected only a single phonological system, not only would a 'muddled' performance be expected, but also there would be an affect on the D1. Certainly, Chambers has suggested a 'no man's land':

> Dialect acquirers who immigrate after the critical age invariably discover when they revisit their old homes that their dialect is now perceived as 'foreign', yet their neighbors in their new homes also perceive their speech as 'nonnative'. Immigrants, often to their bafflement, come to sound less like

> the people in the old region without sounding quite like the people in the new region (Chambers 1992, 695, fn. 11)[37].

In the data that has been collected, there have been both D1 and D2 tokens as well as intermediate forms. It is not known if this is because there is a single system, or because there is code-drifting between the two systems. There was no data that tested whether the participants had a single phonological competence, or two systems – either different registers or completely different phonologies. The only data that was collected concerning multiple competences has been anecdotal, for the most part, and not rigourously tested.

The debate between a single-system competence versus a two-system competence is very interesting and worth further research in both second dialect acquisition studies and SLA studies. The data collected for this thesis do not fully support either side of the debate: some speakers are probably bi-dialectal and others are in Chambers's 'no-man's-land'. Additionally, the pursuit of this debate would have detracted from the main goal of this thesis: the phonological structure of the interdialect.

It was therefore decided that this thesis would not engage in the one-system versus two-system debate, except, perhaps, in passing. Obviously, references are made to the native dialect and the target dialect since the interdialect draws from both systems. This thesis, instead, concentrates on the interdialect itself, more or less in isolation.

It is assumed that this system started as an exact copy of the native dialect. In this thesis, the interdialect is examined disregarding the question of whether the interdialectal system is a copy of or is the original native dialect is not a concern. The primary interest lies in the structure of the interdialect itself.

2.3 Some Factors Contributing to Dialect Acquisition

Several factors can contribute to successful acquisition – or lack thereof – of a second dialect. Many of these factors are sociolinguistic.

Motivation is a reason for successful phonological acquisition of a second language (Gardener and Lambert 1972; Gardner 1985; Bongaerts, Mennen, and Van der Slik 2000; Moyer 1999; Crookes and Schmidt 1991). At least one person who was recorded for this thesis was bullied at primary school because of speaking differently. Certainly, such peer pressure – not an unknown playground phenomenon – is motivation for dialect acquisition. However, motivation is difficult to quantify and test.

[37] The author falls into this category.

Attitudes towards a language or a dialect also contribute to the success of acquisition. Language attitudes were tested directly and indirectly. There were no significant results of the direct testing. The indirect testing – open-ended questions during a taped interview – yielded more results that could not be quantified.

The sociolinguistic environment is certainly a factor in successful dialect acquisition. In the first set of recordings made for this thesis, there were fifteen children between the ages of five and fifteen recorded. Of those fifteen, eleven attended the International School of Aberdeen, referred to locally as 'the American School' and none of those eleven showed any interdialectal change at all. The other four were enrolled in local schools – that is either state-run or private schools that cater to the local populace.

Two of those four showed very little change, having been in the UK for a short period. The other two participants showed very rich and diverse interdialects.

A similar pattern emerged in other sets of recordings. Excluding the first set and the pilot data , there were an additional thirty-two children recorded. Of those thirty-two, three attended international schools and showed no change, similar to the initial recordings. The remaining twenty-nine attended local schools, and only five demonstrated no change: the other twenty-four showed some sort of acquisition of the second dialect.

Since the main object of this thesis is to examine the phonological structure of the interdialect, it was noted early in the data collection process that participants enrolled in international schools would not be very useful to record. It was immediately noticed during recording that participants who attended schools that cater to the local populace showed far more interdialectal development than their counterparts enrolled in schools catering towards an international community. Therefore, in an attempt to avoid wasted resources in collecting uninteresting data, it was decided that one of the conditions for participating in this study was that children must be enrolled in local schools[38].

Accommodation is another significant factor in dialect acquisition. Research in accommodation theory (Giles and Coupland 1992 Giles 1973 Giles and Smith 1979 Giles and St. Claire 1979) makes a simple statement: a speaker will try to sound as similar as possible to their listener in order to promote a degree of friendliness in a conversation. This does not mean that speakers imitate their listener's accent, but rather, they modify the most salient features of their own accent so as not to sound unintelligible to their listener (Giles 1973).

[38] See section 3.2 for details on participation requirements.

This is known as dialect convergence[39]. It is likely that all dialect acquisition begins with communicative convergence, but this is most important with respect to adult dialect acquisition. Dialect convergence has a tendency to be transient. Coupland (1984), for example, shows how clients and shop assistants accommodate towards each other in specific situations (e.g. a sales transaction). Trudgill (1986, 7-10) also shows dialect convergence, but only for a given situation, not over the long term. Dialect acquisition, on the other hand, like language acquisition is more permanent. Given the data that has been collected, there is no way to measure how much accommodation has taken place as compared to how much acquisition.

Dialect accommodation depends on the linguistic and metalinguistic awareness of a speaker. If a speaker is aware of a dialect difference, even unconsciously, they may be able to vary their output and accommodate towards the difference. If a speaker is unaware of a dialectal difference, there is no motivation for accommodation. Trudgill (1986, 1-38) suggests a second dialect is acquired – at least in the early stages – by long-term accommodation.

In this thesis, it is agreed that salience can facilitate the accommodation-to-acquisition process. Salience – for the purposes of the current discussion – is defined as the degree of how noticeable a given linguistic feature is. For example, American English medial-/t/ tapping is very salient. Chambers describes it as "ubiquitous" (Chambers 1992, 682). A voiceless stop [t] in tapping environment is readily noticed by American English speakers, as exemplified by Trudgill's comment about the pronunciation of his given name (Trudgill 1986, 23). Chambers (1992, passim; 1995a, 248-249), Trudgill (1986, 19-20) and Shockey (1984) report that medial-/t/ tapping or de-voicing are easily and quickly acquired. This is, in part, due to the perceived salience of medial /t/.

A supposition that salient features are acquired more quickly than less salient features is subject to certain restrictions. Rhoticity and non-rhoticity are also very salient. This can be seen in imitations and caricatures of GA and SBrE, at least subjectively[40]. Native speakers of English are quite aware of the presence or absence of /r/ on the opposite side of the Atlantic. However, acquisition of rhoticity and non-rhoticity is predicted to have a low success rate. The acquisition of these phenomena is hardly ever complete and often there is no change at all in these features.

[39]There is also communicative divergence. One possible result of second dialect acquisition is sounding less like native speakers of the D1. This is a form a communicative divergence. Since it is convergence that plays a role in second dialect acquisition, divergence is ignored.

[40]Notably, Mike Meyers's character in the *Austin Powers* series of films is non-rhotic with intrusive-r, even though Mr. Meyers is a native speaker of GA.

Salience can lead to accommodation; and long-term accommodation can affect acquisition. Shibboleths – such as the voiceless velar fricative [x] of the Scots/Scottish Standard English *loch* – are salient. Stigmatised features, such as word-internal intrusive-r in the word *draw[r]ing* in SBrE, are also salient[41]. Intimately linked to stigmatisation is prestige (see, for example Trudgill 1983, 169-185). Some features are more stigmatised or more prestigious than others. By the same token, some features are more noticeable and more salient than others. Salience is not the main determining factor in SDA. Salience is, in part, governed by markedness. A marked feature is generally more language specific and less 'universal'. Marked features are found in fewer languages and do not follow the general tendencies of most languages. For example, stops and fricatives are common the world's language, but affricates are less so (Ladefoged and Maddieson 1996). Because marked features tend to be less common, it stands to reason that they would be more salient. However, one reason why marked features are less common is that they are linguistically more complex. Complexity can inhibit idiolectal change. Salience is important in accommodation and acquisition (Shockey 1984, 675; Chambers 1992). Nonetheless, salience itself cannot independently effect language change.

All of the factors mentioned thus far are difficult to measure and test. They very well might affect the acquisition of a second dialect phonology. However, the main focus of this thesis is the phonological structure of the interdialect. These sociolinguistic factors are, for the most part, irrelevant in the interdialectal analysis presented in this thesis. There are cases when it is clear that a sociolinguistic phenomenon as opposed to a phonological phenomenon is affecting the data. These cases are mentioned in the analysis chapters as appropriate.

2.3.1 The Critical Period Hypothesis and J.E. Flege

There is one other major factor affecting the acquisition of the phonology of a second variety: age. In this thesis, it is assumed that there is a critical period, at least as a basic rule-of-thumb. A sensitive period or a critical period is the chronological age or some other maturational constraint inherently linked to age after which acquisition of a second language becomes increasingly difficult. This is the simple definition, which is discussed presently.

Initially, the assumption of a critical age was made simply by observing the data and without any in-depth analysis. Entire families – sometimes including nannies or family friends – were recorded[42]. Whole families include children and adults. It was quickly observed that,

[41] See section 7.2.4.

[42] See 3.1.1 and 3.2 for a description of the recording environment and the subject pool.

with a few exceptions, the adults' language hardly, if ever, changed. At the same time, the only participants who demonstrated notable interdialectal change (again, with a few exceptions) were those who arrived in their overseas residence before the age of eighteen years or so. These fairly obvious observations are what led to the assumption of the critical period. However, it should be noted, that in the data for this thesis, there are the few exceptions that have already been mentioned. There were some adults who demonstrated interdialectal development.

Children between the ages of six and eighteen years were the ideal candidates for participating in this study because of their fairly fluid capacity to learn a second variety. Although eighteen may seem fairly old with regard to phonological acquisition, there are some participants who arrived in the second dialect region around the age of eighteen and demonstrated some dialect acquisition. With the minimum age of six, there is a possibility that some of the data is a result of first dialect acquisition. However, some participants who were very young produced native dialect, target dialect and intermediate tokens. This variety of responses allows for the examination of the interdialect, even though there may be developmental factors involved.

Although this thesis assumes there is a critical period, the critical period hypothesis – in any of its various renditions – is not explicitly tested. Based solely on the collected data, it is assumed that naturalistic exposure to a second dialect – or other linguistic variety – up to the age of six years can lead to completely native-like acquisition. Initial exposure after eighteen years of age leads to minimal interdialectal development. Initial exposure between the ages of six and eighteen leads to mixed results, also yielding the most interesting data for the purposes of this thesis.

Long (1990) posits a series of critical periods in second language acquisition: one for phonology; one for morphology and syntax; one for lexicon and semantics. According to Long, the sensitive period for phonology is between the ages of six and thirteen years old. Acquisition that starts before the age of six should result in a completely native-like phonology of a second variety. Acquisition that starts during the sensitive period – between the age of six and puberty – may result only in a near-native-like phonology of a second variety. In second language acquisition, there may be measurable accents in speakers that start learning their L2 after the age of six (Long 1990, 265). Long's findings about the critical period for phonology more or less concur with the preliminary observations made about the data from this thesis and formed the initial model of the critical period hypothesis that this thesis follows.

Although the critical period for second language acquisition is a good rule of thumb, there are potentially many other factors that can affect the acquisition of a second variety, some of which have previously been discussed. Several studies (e.g. Bialystok 1997; Bialystok and Miller 1999; Scovel 2000) question age as the only factor in the decline of native-like pronunciation[43] readily observable in the majority of older second language learners. White and Genesee show adult learners acquiring native-like pronunciation and production of a second language (1996). Bongaerts[44] (1999; 2000; 1995), Moyer (1999) and Crookes (1991) argue that motivation is one major factor other than age that contributes to a native-like accent of a second variety. In addition to motivation, training in perception and production of the second variety's phonology can also lessen the degree of foreign accent, in some cases to a negligible foreign accent (Moyer 1999; Bradlow, Pisoni, Yamada, and Tohkura 1996; Yamada, Tohkura, Bradlow, and Pisoni 1996). There seems to be some general agreement that age is not the only factor governing the critical period (Piske, MacKay, and Flege 2001).

J.E. Flege is one proponent of the critical period hypothesis, although he does not support a catastrophic decline in L2 native-like production despite the connotations of the word 'critical'. Flege (1999; 1995; Flege, Munro, and MacKay 1995) shows an increase in foreign accent as a factor of age. That is, these studies show a linear relationship between the degree of perceived foreign accent and the age of initial exposure to the second language: the older the age of arrival, the greater the foreign accent. Flege (1999, 104) shows that the age of fifteen seems to be a critical age for his study, at least in statistical terms. Flege (1999) reviews factors other than chronological age that might contribute to the production of a foreign accent in language learners and bilinguals.

One of the reasons for a foreign accent in older speakers, according to Flege (1995) is that the ability to establish new categories for consonants and vowels decreases as the age of initial exposure to the second variety increases. Like this thesis, Flege makes a contrastive analysis between two varieties and then categorises the differences. Unlike this thesis, on the other hand, where the differences are categorised as 'realisational', 'rule-based' or 'underlying'[45], Flege uses articulatory and perceptual bases to classify differences as 'new', 'similar' or 'same'. As with this thesis, differences that are classified as 'same' – i.e. where there is no difference –

[43] The converse of the decline of native-like pronunciation is the increase in foreign accent.

[44] The reader is also directed to Vousten and Bongaerts (1995) for another study on second dialectal acquisition. Vousten and Bongaerts examine the acquisition of dialectal morphology between standard Dutch and the local Venray dialect. The study is not reviewed in this thesis because the finding are not pertinent to the design and results of this thesis.

[45] See 2.6 for a description of the phonological framework used in this thesis.

pose little problem to the acquisition process. Although anything that is the 'same' in dialectal acquisition not only has the same output realisation, which is Flege's basis for classification, but 'same' differences between dialects have the same underlying input and the same phonetic and phonological rules with the same or nearly identical governing environments[46]. Flege does not look at the entire phonological structure of a sound. Instead he concentrates on the acoustic and articulatory properties of a phone – that is, the phonetics. 'New' and 'similar' sounds are, therefore, classified according to, say, formant values for vowels or voice-onset-timing for consonants.

Comparing French to English, for example, the high, front, rounded vowel /y/ of French would be a new sound for a native speaker of English to acquire. English and French each have a high, back rounded vowel /u/ and a high front unrounded vowel /i/ but there is no English counterpart to French /y/. By the same token, French /u/ is similar to English /u/, but the English /u/ vowel has "significantly lower F2 values than its French counterpart" (Flege and Hillenbrand 1987, 178). For Flege, French /u/ is classified as 'similar' to English /u/. However, native speakers of English acquiring French would classify French /u/ as the 'same' as (or, rather 'close enough to') the English L1 /u/. This behaviour of language learners has led Flege to develop an equivalence classification mode which states that 'new' sounds are more easily acquired than 'similar' sounds (Flege 1991; 1995; 1997).

Although Flege's hypothesis would seem to have a certain appeal to all of the similarities that exist between dialects, it was found that such a hypothesis could not be worked into this thesis. For one thing, all of the differences would probably be classified as 'similar', thus requiring the term 'similar' to be redefined. For another thing, phonological structure was noticed fairly early on in the research to be more indicative of interdialectal performance than similarity in acoustic properties. However, Flege's hypothesis about the critical period – that native-like performance in the second variety decreases as the age of initial exposure increases – seems to be supported by the data that are presented in this thesis. Following Flege's 'younger is better' proposition (1999), it is assumed that the older a participant is, the less likely that participant is to acquire any of the second dialect successfully. This is a slight modification from the initial model of the critical period hypothesis based on Long (1990). As has been mentioned, the critical age hypothesis is not tested in this thesis. Instead, Flege's interpretation of the critical age hypothesis is accepted as a given: the older the age of arrival is, the less native-like the interdialect will be.

[46] Again, the details of the phonological framework are outlined below.

Age and sociolinguistic factors have an affect on the success of the acquisition of a second dialect phonology. However, it is argued in the following sections that other factors are more predictive in determining the success in the acquisition of a phonological and the degree of interdialectal change.

2.4 Further Development of the Interdialect

It has been stated that an interdialect is initially based on the native dialect. Subsequent development of the interdialect affects first dialect structures – either duplicates of the D1 forms or the originals, though which is unknown. This thesis examines fossilised D1 structures, over-generalised D2 structures, manipulated D1 structures that no longer represent the native dialect, but are not quite the second dialect, and some D2 phenomena that, indeed, have been acquired.

It is argued that certain phonological features are more susceptible to change and certain phenomena that are more liable to fossilise. In other words, certain phonological structures are more successfully acquired – or at least undergo some sort of change – than others.

2.4.1 Change and Acquisition

One of the foci of this thesis is idiolectal change in the acquisition of a second dialect. The manipulation of D1 structures in interdialectal development is an example of idiolectal change. If a D1 form has changed in the interdialect, it does not necessarily follow that the D2 target has been acquired. There are several examples in the data of such interdialectal responses – that is, intermediate forms. There are other examples in the data of a participant producing tokens of a given phonological feature inconsistently between D1, D2 and ID realisations. There has clearly been some sort of language change.

If this thesis were to focus specifically on second dialect acquisition, the 'fossils' in section 2.1.2.4 above might have been overlooked. By examining idiolectal change, there is a broader scope. Successful dialect acquisition is included in this broader scope since acquisition is a type of idiolectal change.

2.4.2 Successful Acquisition

This thesis is an examination of interdialect phonology and its role in the dialect acquisition process rather than a concentration directly on second dialect acquisition itself. It is predicted that some phonological features undergo more change in the interdialect than others.

Fully successful acquisition equates to consistent, native-like production of the second dialect. Some participants in this study have successfully acquired the whole of a second dialect. The term 'successful acquisition' can also be applied to single phonological features rather than the whole dialect. Other participants successfully acquired some, but not all of the phonological variables examined in this thesis. The term 'successful acquisition' can be applied to the whole dialect or just a single phonological feature. As this thesis concentrates on the interdialectal development of specific phonological variables, the latter definition is more common, though not exclusive. That is, successful acquisition generally applies to consistent, native-like production of a target dialect phonological variable, but can also refer to the whole of the target dialect – or even a specific aspect of the target variable – depending on the context. The context makes clear as to what meaning of 'successful acquisition' is being applied.

Acquisition of a second variety is defined as 75% or greater production of a particular realisation. The cut-off point of 75% is chosen as the point of acquisition because interlanguage and interdialectal development tends to taper off at that point. This pattern was "first observed by Wang and Cheng (1970) and confirmed in numerous studies since (e.g. Baily 1973, 77; Bickerton 1975, 65; Chambers and Trudgill 1980, 179)" (Chambers 1992, 695). Although 75% may seem like a rather low threshold to determine acquisition, it is high enough to determine that there has been interdialectal development (Lardier 1995b; 1995a). Using a higher threshold such as 90% (e.g. (Marcus 1995)) has the potential of discarding a lot of useful data. Additionally, such a high threshold would mean that only one or two of the participants in this study have acquired a second dialect, which contradicts the impressionistic experience of the data collection.

To determine how 'native-like' a response is, an utterance is compared to the standard reference accounts of the two varieties (Giegerich 1992; Cruttenden 1994; Kenyon 1994; Wells 1982; Jones 1997). Initial comparisons are made from personal impressionistic judgements of the responses made by the interviewer, with acoustic analysis as necessary[47].

[47]There were several acoustic analyses. The details of each acoustic analysis are outlined in the analysis chapters 4 through 7, as appropriate.

It is also possible to consistently produce tokens that are neither D1 nor D2 but are instead interdialectal or intermediate. The D2 realisation has not been successfully acquired. However, the consistent responses indicate that *something* has been acquired.

It is proposed that some phonological features are more likely to be successfully acquired – or at least consistently deviate from the D1 – than others. Success of acquisition or consistent acquisition is the only method available to determine any sort of order or hierarchy in the dialect acquisition process.

There is no other simple way to determine if there is an order in which phonological features are acquired in a second dialect. The participants of this study are only recorded once. This is not a longitudinal study. To say X was acquired before Y would only be a guess. The actual order of acquisition cannot be observed, at least with the way this study was designed.

There are ways of indirectly positing an order of acquisition. One way is to say that feature X is easier to acquire than feature Y (Drews 1997). But there is no way to actually know, at least with the data that was collected, if the acquisition was easy or if it required a lot of cognitive effort, not to mention that 'ease' and 'difficulty' are difficult to quantify.

Drews (forthcoming) presented an implicational order in the acquisition of non-rhoticity. Rhoticity is a complex phonological feature and certain components of rhoticity must be acquired before others[48]. The other phonological features examined in this thesis do not form such dependent relationships, so the hierarchy proposed for the acquisition of non-rhoticity might not extend to the whole of a second dialect phonology.

Another indirect way to propose an order of acquisition is to examine the rate of acquisition. The idea of examining the rate of acquisition stems from Major and Kim (1996) (see also Major 1997) and their 'Similarity Differential Rate Hypothesis'. Features that have a slow rate of acquisition are those that do not change at all or only change minimally. Features that have a faster rate of acquisition are those that equal or closely approximate the target. This seems intuitive. There are some flaws within the similarity differential rate hypothesis. Within the SDRH framework, it is possible for different phonological features to have different starting points in the acquisition process. That is, it is possible, upon exposure to the second variety, for one feature to start changing immediately and a second feature to start changing later[49]. Still within the SDRH, it is furthermore possible for that second feature to have a faster rate of change than the first. With the faster rate of acquisition, it is possible that the second feature can be fully acquired before the first. Perhaps the unlikelihood of this scenario prevents it

[48] See chapter 7 on the analysis of rhoticity.

[49] The latter feature presumably changes after more data has been collected by the speaker.

from ever being realised. Yet it is still a possibility within the SDRH. Although the notions of speed and rate of change might be useful in explaining the success of acquisition of dialectal variables, the notion is not adopted in this thesis. Part of the reason for rejecting rate is because of the flaw of the SDRH. The main reason for rejecting rate, however, is because in order to determine rate, there must be at least two measurements with respect to the dimension of time. In this thesis, only one measurement was made.

The data collected present only a snapshot of the interdialectal phonology. This is not a longitudinal study; the data were collected at only one point in the interdialectal development of the participants. From the data, there is no direct way to determine if one feature was acquired before or with a faster rate than another. The only way to measure the order or rate of acquisition is through examining how successfully a participant acquired a D2 feature or how much that participant no longer uses native forms. Even in a longitudinal study where order or rate of acquisition can more readily be observed, that observation is based on the success of acquisition.

Therefore, this thesis does not predict an order of acquisition nor does it predict the rate of acquisition of one feature as compared to another. Instead, it makes a simpler prediction that some phonological features are more successfully acquired or more liable to change than others. Conversely it is predicted that some phonological features are more resilient to change than others.

This 'order of acquisition' depends on how the phonological feature differs between the two dialects and at what phonological level. In this thesis, it is proposed that the more abstract and complex a phonological feature is, the less likely it is to be successfully acquired[50]. The abstractness of a phonological feature depends on its relationship to the input and the output.

The output is the least abstract level of phonology. Variants, realisations and phonetic production represent the output. These sounds are physically produced by articulatory gesture and as such are defined as concrete rather than abstract.

The input, on the other hand, is the most abstract. The input is comprised of underlying categories. These underlying categories are never pronounced; they must be implemented through phonological and phonetic manipulation. Underlying representations form patterns and relationships with each other. Strings of underlying representations are what compose the lexical representation of words in the mental lexicon.

[50] Examples of complexity are provided in section 2.1.2.2, above. Abstractness is discussed presently.

In this thesis there are three types of phonological differences. These types of differences vary in their abstractness and therefore in their success of acquisition. The definitions of these differences are outlined in the following section.

2.5 Generative Phonology and the *Sound Pattern of English*

This thesis follows a basic generative phonology. The details of how the framework specifically applies to this thesis are outlined below. The foundation of generative phonology was the "interim report on work in progress" as opposed to a "definitive and exhaustive study of phonological processes" known as the *Sound Pattern of English* (Chomsky and Halle 1968, vii. Hereinafter, SPE). SPE was the culmination of various threads of contemporary phonological theory as well as a reaction against the American structuralists (e.g. Bloomfield 1933; Hockett 1958).

SPE made extensive use of Jakobson's distinctive features [51] (SPE, ch.4). The structuralists believed that the phoneme was the most primitive sound unit. A phoneme is the minimal unit that can distinguish meaning (Fromkin and Rodman 1998, 254ff.; O'Grady, Dobrovolsky, and Katamba 1996, 73ff.; Crystal 1997, 287f.). A phoneme is made up distinctive features. Distinctive features are binary, so, for example the feature [voice] can be [+ voice] or [– voice]. If the binary value of one of the distinctive features comprising a phoneme changes, then the phoneme itself changes. Thus, in generative phonology, the phoneme is no longer the most basic unit of sound[52].

Distinctive features can also be used to describe structuralists' allophonic variation. For example, in Spanish, voiceless stops contrast with voiceless fricatives, so *tierra* 'earth' contrasts with *sierra* 'mountain' or 'saw'. Thus the feature [continuant] can distinguish meaning in Spanish (Harris 1969; Harris-Northhall 1990). Also in Spanish, though, underlying voiced stops become [+ continuant] intervocalically, e.g. *bebe* [beβe] 'baby' (Harris 1969, 37 ff.; Harris-Northhall 1990, passim). This is clearly an allophonic description.

Distinctive features are used in SPE, in part, to remove the need of phonemes. When a sound or a natural class can be described with sets of binary features, then the phoneme is no longer necessary and the phonological description of the underlying representation can become more abstract. This thesis also makes extensive use of distinctive features, mostly

[51] Jakobson's influence is evident from the dedication of SPE.

[52] This is similar to physics where the atom is no longer considered the smallest physical unit, rather it is the quark or the strings that make up a quark.

to describe underlying representations but, occasionally, like the Spanish example above, to illustrate the transformation of the underlying representation to a surface representation. The context disambiguates which use of distinctive features is being employed.

A distinction must be made between the abstractness of SPE underlyers and the abstractness of underlyers in this thesis. To account for certain alternations such as *divine* ~ *divinity, profane* ~ *profanity, serene* ~ *serenity*, SPE posits the underlying representations /ī/, /ǣ/, /ē/ – or even I, A and E – respectively (SPE, 184-185). SPE additionally postulated an underlying voiceless velar fricative /x/ for *right* (SPE, 234). The long but lax vowels and the voiceless velar fricative never surface in English[53]. Underlying representations are abstract units and, in principle, any symbols could be used for their transcriptions. The use of IPA symbols has become a convention, mostly to emphasise the relationship between underlying and surface representations. In this thesis, a more transparent relationship between underlying and surface representations is generally preferred – like that between phonemes and allophones. Sometimes SPE's underlying representations, such as /x/ or /ǣ/ are a bit too abstract. At other times – namely during discussions about the underlying representation of /r/ – SPE's level of abstractness becomes necessary.

Another aspect of generative phonology is transformational rules linking the abstract underlying representations to the concrete output realisations. More importantly, SPE and generative phonology order rules serially. The output of one rule can feed into another rule, serving as the input for the subsequent rule. Alternatively, the output of one rule may be transformed so that a subsequent rule cannot apply even though the underlying form may be a potential candidate for the subsequent rule.

One function of the specific ordering of rules is that "rules can be made more general if they are stipulated to apply in a particular order" (Jensen 1993, 7). In other words, the rules would be more 'universal' – i.e. applicable to many languages. The ordering of the rules would be more language specific. The generalisability of the rules does not prevent new, language-specific rules being postulated. In fact, in an argument *reductio ad absurdum* rules can be postulated showing the suppletive English morphemes *go* and *went* as having a shared underlying representation (Comrie 1978)[54]. No stance is made in regard to the serial ordering of every rule presented in this thesis. Only a small set of rules applicable to a specific underlyer

[53]The velar /x/ appears in Scots and Scottish Standard English.

[54]This is one reason why the above-mentioned abstractness of SPE's underlying representations is used with caution.

are presented and any particular rule ordering only applies to this small set. Additionally, language- and dialect-specific rules are postulated.

One concept that does not receive much attention in SPE is the syllable. Syllable structure is important in prosody – that is, in tone, stress and intonation. Despite the binarity of distinctive features – and of generative grammar in general – SPE does not treat stress in a binary fashion. Instead, stress potentially has an infinite number of values, depending on the length of the utterance (SPE, 32ff.). In this thesis, stress can be treated as a binary feature, although this thesis also adopts the concept of the metrical foot: a phrase, clause or similar utterance with one and only one stressed syllable (Selkirk 1980; see also Giegerich 1992, 181).

Generative phonology, specifically SPE is "referred to as a linear theory of phonology, in that its representations are a linear sequence of segment and boundaries" (Jensen 1993, 7). The application of rules can also be considered linear[55]. One phonological theory that is not linear is autosegmental phonology. Autosegmental phonology allows the application of one (distinctive) feature to apply to multiple segments simultaneously. This is useful for describing tone languages or languages with vowel harmony (Jensen 1993, 11-15). One of the outcomes of autosegmental phonology has been a hierarchical relationship of all distinctive features (see Clements and Hume 1995, 292). The feature hierarchy is clearly an extension of Jakobsonian distinctive features and is essentially an extension of SPE.

Although this thesis uses distinctive features, the ornate hierarchy presented by Clements and Hume (1995) is simply overcomplicated for the kind of data that is found in this thesis. However, another branch of autosegmental phonology looks at syllable structure, timing slots and melodic units. Timing slots and melodic units are, in short, the segments permissible in syllable rhymes, the organisation of which contributes to stress, intonation and timing of a language. In this branch of autosegmental phonology (Perlmutter 1995) one vowel segment, for example, can be associated to two timing slots yielding a long vowel[56]. The association of a vowel with multiple timing slots and the concept of melodic units can be used to thoroughly describe syllable-rhyme /r/ (see Giegerich 1999; see also chapter 7).

In SPE, phonology interpreted the syntax. Phonological processes could only apply after a sentence had been generated by the syntax. In this way, the phonology is not an isolated system as it was with the structuralists. Instead, phonology interacts with the syntax and the lexicon. The structuralists examined phonology in isolation although they also looked at

[55] Within the application of one cycle, at least, rule application could be considered linear.

[56] Such multiple association can also account for affricates. SPE's treatment of affricates as [+ delayed release] did not quite fit in with the rest of the binary features.

morphophonemics – the interaction of phonology and (inflectional) morphology (Bloomfield 1933). A more recent extension of the generative framework presented in SPE is the theory of lexical phonology (Mohanan 1985; Kiparsky 1982). In lexical phonology, phonology operates in the lexicon with no interaction with the rest of the grammar except, perhaps, morphology. This is similar to the structuralists' view. Lexical phonology goes a step further by stratifying the lexicon and stipulating what kinds of phonological operations are permitted in each stratum. Additionally, though, phonology also operates post-lexically. Like SPE, the phonology interprets the syntax. A hint of lexical and post-lexical processes is presented in the description of the tapping of medial /t/ (discussed in chapter 4).

The most popular phonological theory currently is Optimality Theory (McCarthy and Prince 1993; Prince and Smolemnsky 1993; Archangeli and Langendon 1997). In OT, the phonology of a language consists of a universal set of constraints. Different languages are defined by language-specific ordering of these constraints. One important tenet of OT is that lower ranked constraints are violable, at least to a minimal extent, so long as higher ranked constraints are respected. The lofty aims of finding universal as opposed to language-specific constraints makes OT in its current state ill-equipped to compare to similar varieties of the same language. For example Hammond (1999) examines only one variety of American English. Without being able to describe the differences between the dialects, the task of describing the acquisition of dialectal differences is difficult.

The type of data collected for this thesis requires a fairly simple framework. A framework which permits examination of differences in the input or underlying representations as well as differences in phonological and phonetic implementations is needed. Part of the phonological and phonetic implementation includes rules that describe the monodialectal situation as well as the differences a dialect learner has to target in acquisition. The framework must also allow for the phonology to interact with the morphology and the syntax. Phonological analysis of syllable structure must be permitted in the framework, too, though perhaps not as extensively as autosegmental phonology.

A generative framework permits all such analyses and comparisons. Even though SPE does not examine syllable structure in depth, the framework presented therein does not prohibit syllable analysis. The rules and rule ordering of a generative framework facilitate discussion of the data presented in this thesis. As with the other basic theories followed in this thesis – a contrastive analysis and the critical period – the data are the primary reason for choosing a generative phonological framework. Although the SPE-style of phonology may be a bit

outdated (Shockey, p.c.), it is particularly useful in describing the data, especially when combined with certain aspects of the more modern extensions of generative phonology such as autosegmental phonology and lexical phonology[57].

The basic generative framework of this thesis incorporates several aspects from SPE. The first is the abstract, underlying level of lexical or phonological representation. This thesis will use several terms to refer to underlying representation. Sometimes in this thesis underlying representations will be referred to as categories or underlying categories. Sometimes the underlying representations will be referred to as phonemes. A 'phoneme' in this thesis is synonymous with underlying phonological representation of a single segment – that is, a consonant or a vowel. The term 'phoneme' is used to evoke a slightly more concrete representation of an underlying form that bears some resemblance to the output, unlike, for example, /x/, as mentioned above. Other terms include 'underlying form' or even just 'underlyer'.

A second aspect of the basic generative framework followed in this thesis is surface realisations. In SPE, surface structures are the output of the syntactic component of a grammar that feed into the phonological component. Since the syntactic component is by and large ignored in this thesis, 'surface representations' refer to the output of the phonological component which resemble the phonetic reality. The phonological surface representations serve as the input to phonetic mechanisms. It will be argued in the next section that, in this thesis, phonetic implementations are classified along with the output of the phonological system as 'surface representations' or 'output realisations'.

A third aspect of SPE-like generative phonology that is incorporated in this thesis is the rules transforming the abstract underlying input into the (more) concrete output. This framework is explained in more detail in the next section. This aspect includes not only the presence of a rule, but how the rules work as a system, how they can potentially apply to more than one underlyer and the order in which the rules apply.

Another aspect from generative phonology used in this thesis is distinctive features. As has been mentioned, distinctive features tie in with the underlying representation as well as the transformational process.

The Sound Pattern of English is reviewed here because the tools used in this thesis for phonological analysis – underlying representations, output realisation, rules linking the two and distinctive features – are provided therein. The basic theoretical framework followed in

[57] Although autosegmental phonology is not considered generative phonology because of its non-linear approach to segments and prosody, it is clearly an extension of the generative school of thought.

this thesis is based loosely on SPE. It has been mentioned that other aspects not specifically addressed in SPE, such as syllable structure or lexical and post-lexical application of the phonology, are also used in this thesis. Although SPE provides the basic phonological theory for this thesis, it does not rely exclusively on SPE. More importantly, this thesis does not adhere to some of the interpretations of English phonology that is made in SPE. This thesis uses the theoretical framework of SPE, but not SPE's analysis. Sometimes the phonological descriptions made in this thesis will not conform to a strict SPE-like generative analysis. Such departures from SPE and from the basic tenets of generative phonology will be made as appropriate.

2.6 Phonological Framework

One of the hypotheses of this thesis is that surface representations are more susceptible to interdialectal change than underlying representations. These terms will be defined in more detail shortly. First, let us begin with a simple re-write rule:

(1) $X \rightarrow Y / Z$

The generative framework followed in this thesis would interpret rule (1) as "the underlying (lexical or phonological) representation X is realised as (surface representation) Y in the environment Z," where (Y) can serve as input to other rules. Briefly ignoring terminology, this thesis had originally hypothesised that (Y) differences between dialects were more liable to interdialectal change than (Z) differences; differences of type (X) were least likely to change at all. The data did not support such a detailed differentiation.

Instead, this thesis makes a distinction at the arrow of rule (1). Phonological phenomena that differ at the level of underlying lexical or phonological representation (X) are still claimed to be the most resilient to interdialectal change. Anything to the right of the arrow (Y and Z) are more susceptible to interdialectal development. These two types of differences are defined as realisational differences (Y of rule (1)) and contextual differences (Z of rule (1)).

2.6.1 Realisational Differences

A realisational difference is one in which two dialects share a common underlyer, but, in certain contexts, the surface realisation or output of that underlyer differs between the dialects. In other words, a D2 rule may affect the same underlying segment in the same environment as the D1,

but the output realisation may be different. In this thesis, realisational differences are concerned with the *phonological* output.

The following examples (2)e-g include phonetic realisational differences. The phonological output and phonetics are presently grouped together because both are concerned with the actual, physical articulation of a sound. Rules and underlying representations are more concerned with patterns and relationships of sounds. Beyond these examples, though, a realisational difference concerns the output of a phonological rule.

(2) a. $X \rightarrow X' / Z$ (D1)

b. $X \rightarrow Y / Z$ (target)

c. $/l/ \rightarrow [\text{ɭ}] / \overset{\text{Rh}}{\underset{\perp}{}}$ (GIE, D1; see 2.7.1)

d. $/l/ \rightarrow [\text{ɫ}] / \overset{\text{Rh}}{\underset{\perp}{}}$ (GA, target)

e. /o/ → [oʊ] (GA)

f. /o/ → [əʊ] (SBrE)

g. /o/ → [o] (GIE)

In[58] native and target dialects, there is a similar phonological environment governing output. The underlying representation is the same. The phonological environments in which this underlyer is transformed remain the same. But the surface representation differs.

For example, both General Indian English (GIE) and General American English transform an underlying /l/ in syllable rhyme (see section 2.7.1). In GIE, syllable-rhyme /l/ is retroflexed. In GA, syllable-rhyme /l/ becomes 'dark' or more velarised than in syllable onsets (see, for example, Olive, Greenwood, and Coleman 1993, 204-216). The difference, then, between GIE /l/ and GA /l/ in syllable rhymes is, in this thesis, realisational. The underlying status of these sounds are the same. The environment in which the underlyer is manipulated is the same. Only the surface output of the rule differs.

With realisational differences, there are two types of difference: context-defined and context-free. In a context-defined difference, the two dialects have a common phonological rule, each with the same underlying segment and governing environment. Such a

[58]The symbol "⊥" means "here, in this position". So, the environment $\overset{\text{Rh}}{\underset{\perp}{}}$ means "in the position of syllable rhyme". See, for example (Giegerich 1992, 302).

context-defined difference was exemplified in the previous paragraph: both varieties have a rule affecting the same underlying representation /l/ in the same phonological environment, syllable rhyme. The context-defined difference is that in GIE, the output of the rule governing syllable-rhyme /l/ is a retroflex lateral realisation [ɭ], but in GA, the output is a more velarised, dark lateral realisation [ɫ] ((2)c-d) (David 1985). The difference is in the surface representation and thus is a context-defined realisational difference.

A context-free mapping occurs to all realisations of a given underlying representation. Like context-defined differences, the underlying and lexical status of the D1 and target sounds are the same. Only the output realisation differs. For example, GA and SBrE have the same lexical distribution of the mid, back, tense vowel /o/. Any phonological rules governing /o/ are also shared between the two varieties. Additionally, both dialects realise /o/ as a diphthong. In GA, the diphthong is generally transcribed as [oʊ] and in SBrE as [əʊ] (see Jones (1997, pg. x) and Giegerich (1999, 194) regarding the diphthongisation of /o/). In GIE, underlying /o/ does not surface as a diphthong, yet it has the same distribution as the GA and SBrE vowel (see (2)e-g). David's (1985) subjects quickly acquired GA diphthongal realisations for /o/ and /e/, but not quite as successfully as dark [ɫ], suggesting that context plays a relevant role in dialect acquisition. Perhaps context implies that there is a phonological process – i.e. some underlying sound is transformed in a particular environment – whereas a context-free difference might just be a difference in phonetic implementation (Shockey, p.c.).

The velarisation/retroflexion of /l/ is confined to syllable rhymes while the diphthongisation/non-diphthongisation of /o/ is context-free. There is a wider domain to be learnt in a context-free difference. This thesis concentrates mostly on context-defined realisational differences, so there will be little further discussion about context-free differences[59]. Since in a realisational difference there are no differences in underlying representations or governing environments, no reference needs to be made to the phonological rules (Shockey, p.c.). However, for the context-defined realisational differences examined in this thesis, the phonological rules and derivations are generally outlined in order to highlight exactly how the two dialects differ for a given phonological variable, in keeping with the Contrastive Analysis Hypothesis (see section 2.1.3, above).

One claim of this thesis is that the native variety phonological structures are exploited as much as possible in interdialectal development. Example (2) demonstrates a change of the

[59]One of the phonological variables that was originally going to be studied in this thesis was diphthongisation of /o/ particularly with regard to Scottish Standard English. Since ScSE is not included in this thesis, any analysis of the diphthongisation of /o/ is also excluded.

output of a D1 rule with the input and context remaining constant. The interdialectal output can be a new phone[60]. Alternatively, the interdialectal output might come from the inventory of existing D1 phonic inventory. The phonic inventory is comprised of the output phones or realisations of a dialect. The term 'phonic inventory' is used to allude to discreet units of sound in the output, the phones. The phonic inventory includes segments whose output is faithful to the input in voicing, place and manner of articulation. For example, /p/ can be said to be a member of inventory of English underlying categories while [p] is an output realisation and part of the phonic inventory[61]. However, output phones are not always identical to the input. The phonic inventory of northern hemisphere English includes the glottal stop [ʔ], which has never been described as an underlying representation in English. Also included in the phonic inventory of English is schwa [ə], whose underlying status is debatable, and the tap [ɾ] whose lack of underlying status is discussed in chapter 4. Even though of [ʔ], [ɾ] or [ə] are not part of the inventory of of underlying categories in English, all three of these sounds sounds are clearly part of English phonology. The sounds are part of the phonic inventory. The term 'phonic inventory' is preferred to 'phonetic inventory' because the latter can conceivably refer to features such as aspiration, co-articulations, tone and intonation whereas a 'phonic' inventory, at least in this thesis, is limited to just segments, for example vowels and consonants, and are limited to the output of phonological derivation.

A realisational difference deals with the output or surface representation of a rule, the (Y) of rule (1) as exemplified in (2). In terms of Chambers (1992), these would be classified as 'simple rules' and Payne (1980) would refer to these as 'low-level rules'[62]. The acquisition of these types of sounds has been noted to happen in adults (Trudgill 1986). This suggests easy and rapid acquisition, especially in younger speakers. One phonological example of a realisational difference in this thesis is the tapping of intervocalic /t/ in North American varieties of English and the glottalisation of intervocalic /t/ in some British varieties of English: in both groups, /t/ can undergo change in intervocalic position, but each dialect has a different output[63]. It is shown that differences concerned mostly with the output of the phonology – realisational differences as defined here – are the most likely to show the most interdialectal development.

[60] In this thesis, a phone is considered a discrete unit of sound. This unit of sound may be part of the underlying input and/or it may be part of the surface representation. In this thesis 'phone' is synonymous with 'segment'.

[61] Simple single-letter graphs are used to represent underlying representation rather than a complete feature matrix for the sake of typographical convenience.

[62] Chambers and Payne are reviewed later in this chapter.

[63] The details of the rule are phonologically and sociolinguistically far more complex than presented here, but are outlined in chapter 4.

2.6.2 Rule-based Differences

In manipulating first dialect structures in dialect acquisition, it is possible that the governing environment of a phonological rule becomes broader or more restricted in the interdialect.

(3)	a.	X → X' / A, B	(D1)
	b.	X → X' / A	(targets)
	c.	X → X' / A, B, C	
	d.	X → X' / A', B'	
	e.	/æ/ → [æ] /	(NYC)
	f.	/æ/ →[æh] /	(Philadelphia)

Payne (1980) looked at these kind of differences in the acquisition of the Philadelphia short-*a*. The conditioning environments governing the Philadelphia short-*a* are very complex. The same segment has similar conditioning in the New York City accent forming a subset of the Philadelphia pattern. Children who move to Philadelphia from New York City acquire the Philadelphia pattern fairly successfully.

Based on Payne's example, it can be postulated that rule-based differences – sometimes called 'contextual differences' in this thesis – in which the environments of a rule of the target variety form a subset of the native variety is likely to undergo more change than if the target environment is larger than the native environment. Regardless if the target rule has a larger or smaller environment, a contextual difference assumes that the rules governing a particular underlyer in the D1 and the D2 have similar governing environments, as is exemplified by Payne's participants from New York City.

Payne's participants from the Northern Cities were not very successful in acquiring the Philadelphia pattern of short-*a*. This is because those from the Northern Cities do not have any rule at all like the Philadelphia pattern. They have to acquire an entirely new rule.

Acquiring a new rule maps a new output to an existing underlying input. There are no changes to any underlying segment. The new rule may introduce an entirely new phone to the phonic inventory – a sound that does not exist in the phonology of the first dialect. A new rule might also utilise an output phone from the existing D1 phonic inventory.

If a new output realisation – that is, not a member of the existing D1 phonic inventory – is mapped to an underlying segment already part of the speaker's original dialect in a predictable environment, then the result is clearly the acquisition of a new rule. There are no changes to the underlying system[64].

[64]The 'elsewhere' condition is usually implied and is generally excluded when rules are written out as they are here. The 'elsewhere' condition is listed here to illustrate potential problems encountered by dialect learners.

(4) a. /X/ → { [X'] / A ; [X] / elsewhere } (D1)

b. /X/ → { [X'] / A ; [X''] / B ; [X] / elsewhere } (target)

c. r → [ɚ] / $\overset{\text{Rh}}{\perp}$ (GA)

d. r → [ə] / $\overset{\text{Rh}}{\perp}$ (SBrE)

The words[65] that are affected by the new rule do not change their underlying lexical representation. The lexical representation of a word is the string of underlying segments of which it is comprised. The lexical representation is part of the mental lexicon. Because the new output occurs in a predictable environment, there is no indication that a change in underlying representation has occurred. There has only been a restructuring of the rule linking the input to the output.

On the other hand, if in the acquisition of a new rule, an existing member of the D1 phonic inventory is mapped to a D1 underlyer – one to which the pre-existing phone was previously unassociated – there is potential homophony, overlap and neutralisation of distinction. If rule (4) is acquired, the output of the rule may overlap with an existing rule (5) in the D1.

(5) a. /W/ → { [X] / C ; [W] / elsewhere }

b. V → [ə] / $\overline{[-\text{ stress}]}$ (GA, SBrE)

If the [ə] phone were not part of the D1 phonic inventory, then the acquisition of rule (4-d) would present no problems in the interdialect. However, [ə] might belong to either /r/ or a vowel. The acquisition of rule (4) introduces significant ambiguity in the interdialect. Indeed, this ambiguity is a leading factor in intrusive-r (see chapter 7). It was argued in section 2.2.2 that, since an interdialect can be fluid, a certain amount of ambiguity must be permissible. This kind of ambiguity – caused by the acquisition of a contextual or rule-based difference – can ultimately lead to changes in the system of underlying categories. The acquisition of the contextual difference might be relatively straightforward, but the interaction with the underlying system can cause difficulties. Changes involving the underlying system are discussed below in section 2.6.4.

[65] Rule (4) is an oversimplification regarding rhoticity. The full details of /r/ in syllable rhyme are discussed in chapter 7.

Sometimes the governing environment of an existing D1 phonological rule does not suffice to produce D2-like output. The D1 governing condition must be manipulated in the interdialect in order to produce D2 output. Some native SBrE speakers have to manipulate a native rule governing /t/ in order to acquire GA tapping. Such manipulation is discussed in chapter 4

Sometimes, the acquisition of a rule entails a lexical difference, such as the /ɑː/ ~ /æ/ distinction in pairs like *maths/pass*, discussed in chapter 5. Lexical differences and difficulties involving them are discussed presently.

2.6.3 Lexical Differences

The broad definition of a lexical difference is one in which there is a non-predictable difference in pronunciation, but in which the two variants have identical semantics. For example, there is no rule that can predict the difference in pronunciations between *jumper* and *sweater*, but either word refers to a long-sleeved garment worn in cooler weather.

Chambers (1992) distinguishes between 'lexical' variants – such as the *jumper* ~ *sweater* type – and 'pronunciation' variants – such as the two pronunciations of *tomato*. Both types of differences are, in fact, lexical. Although data was collected regarding the *jumper* ~ *sweater* type of difference, this thesis only examines 'pronunciation' differences. For the remainder of the thesis, a lexical difference refers specifically to a 'pronunciation' difference, unless otherwise stipulated.

Within a phonological framework, a lexical difference is one in which two variants are not synchronically related in phonological or other formal terms. However, the two variants can be diachronically related and have very similar phonological forms[66]. Often, lexical variants in English have the same orthographic form. Many lexical differences cannot systematically be predicted with respect to large groups of words. Two examples are the words *leisure* – /ɛ/ in SBrE and /iː/ in GA – and *lever* – /iː/ in SBrE and /ɛ/ in GA (Giegerich 1992, 60-61).

Although in these last two examples, there is no predictable difference, unpredictability is not necessary to qualify as a lexical difference. In fact, a lexical difference can be present in a large group of words and that difference can be predictable between two varieties. For example, in Scots, *house* and the MOUTH lexical set have an underlying representation /u/ as their vowel

[66]The example *tomato* has already been mentioned. That difference developed within the past few hundred years. However, *father* and *paternal* are phonologically similar and the distinction between the two roots is over a thousand years old (Giegerich, p.c.). The temporal distance that would qualify two variants as a lexical difference is not defined here, although it is an issue that might be considered in other research.

as compared to the /aʊ/ diphthong in SBrE and GA. The different underlying representations can easily be predicated by a rule (6).

(6) /aʊ/ → [ʉ]

It would be ludicrous to posit (6) as a rule within Scots. Such a rule in Scots would wrongly imply that Scots /u/ and SBrE/GA /aʊ/ are synchronically related since they would share the same underlying representation. However, a native SBrE or GA speaker acquiring Scots would have to acquire rule (6).

Although the difference is lexical, the difference can be predicted by a rule. The acquisition of the difference, then, would equate to the acquisition of that rule. This is similar to differences regarding the acquisition of a new rule mentioned in the previous section. However, in a contextual difference, the underlying representation is the same in both dialects, but with different realisations. In a lexical difference, the underlying representation for a word or a large group of words differs between the two dialects. For that reason, it is predicted that these types of lexical differences are not acquired as successfully as realisational differences. However, in the Scots /u/ example above, it is possible that the lexical difference is acquired as a contextual or rule-based difference. The acquisition of a new rule – whether or not the rule concerns a lexical difference – is predicted to have a higher degree of change than acquiring differences affecting the system of underlying phonological categories.

The difference between GA and SBrE regarding *bath, pass, can't* – i.e. the BATH lexical set – can be summarised by a rule[67]. For a native GA speaker acquiring SBrE, there are numerous exceptions to rule (35), causing inherent difficulty. Yet, the bulk of the BATH lexical set can be acquired if rule (35) is the target. The 'rule-governed' lexical difference examined in the thesis is the distribution of the low vowel in the BATH lexical set, chapter 5.

2.6.4 Differences in Underlying Representations

A third possibility for manipulation of a D1 in the acquisition of a second dialect is a change in the system of underlying categories. There may be fewer or more underlying segments in the interdialectal inventory as compared to the native dialect. A change in the system of underlying representations can bring about a change to the input of a phonological derivation.

(7) a. X → Y / Z (D1)
b. A → Y / Z (target)
c. /ɑː/ → [ɑː] (SBrE)

[67] See rule (35), chapter 5.

d. /ɔː/ → [ɑː] (Canadian English, from SBrE perspective)

This[68] thesis does not explore how changes to the underlying segmental inventory affect the inputs of rules. Instead, this thesis examines how a change to the underlying system affects the relationships amongst segments.

The system of underlying phonological segments of a language can often be divided into subsystems – for example, a consonant system and a vowel system. The underlying consonant system of English varies very little across dialects. There is certainly dialectal variation of consonants, some of which is examined here. Nevertheless, with so little underlying variation in English consonants, the consonantal systems are ignored for the time being. A lot of the dialectal variation in English is due to the composition of the underlying vowel systems (Wells 1982; Giegerich 1992), the governing contexts in which the vocalic underlyers can be transformed and in the ultimate realisational output of vowels.

The addition or deletion of individual underlying segments changes the underlying inventory. In the generative framework followed in this thesis, the phonemic inventory – that is, the inventory of underlying categories – is not as important of a concept as it is to a taxonomic-phonemic framework. However, a phonemic inventory is one way of highlighting the relationship amongst the underlying segments and the categories and natural classes they form[69]. The addition of a new category in the underlying inventory of segments can be caused by the (unlikely) reversal of a previous merger of two categories (Labov 1994, 313,331-333). A new segment or category can also be added to an inventory "when the conditioning environment of an allophonic variant of a phoneme is lost through sound change (and) the allophone is no longer predictable and thus itself becomes phonemic" (O'Grady, Dobrovolsky, and Katamba 1996, 328). This process is called 'phonologisation' in this thesis – a process that is relevant in the discussion of non-rhoticity for example (see chapter 7). A new category or can also be added to an inventory by a combination of phonologisation and reversal[70].

[68]The rule (7)-d is not strictly accurate since /ɔː/ is not a member of underlying segments in Canadian English. However, the rule illustrates how differences in the underlying inventory of segments can affect surface forms.

[69]"Category" and "underlying segment" are synonymous in this thesis.

[70]A third possibility for the addition of new member of the underlying segmental inventory is heavy borrowing from another language in which there are differences in the underlying inventories between the two varieties. Lexical borrowing has been important in the history of English phonology, but is irrelevant for the type of phenomena encountered in this thesis.

2.6.4.1 Merger of Categories

A merger of categories is the loss of distinction between two phonetically similar segments. The frequency of lexical occurrence weighed against the frequency of homophony helps determine if such a merger is feasible (Labov 1994, 328-329; O'Grady, Dobrovolsky, and Katamba 1996, 328).

For example, in Scottish English and in some accents of GA, the labio-velar approximants /w/ and /ʍ/ are a contrasting pair of segments[71]. In these varieties, *wail* contrasts with *whale*. The two segments differ in sonorance (/w/ is [+ sonorant]) and thus also differ in voicing (/ʍ/ is [– voice]). However, both segments are labio-velars, meaning that the body of the tongue approaches the soft palate and the lips are rounded. Thus the two sounds are phonetically similar. The lexical distribution of /ʍ/ is minimal: it is only found in interrogative words and very few other words, and usually only before a front vowel (Labov 1994, 314). A merger would result in very little homophonic clash. The difference between *where* and *ware*, as with many homophonous pairs, is determined by syntactic and semantic contexts. Because of the articulatory similarity and because of the restricted incidence of /ʍ/, /ʍ/ and /w/ are prime candidates for merger, and in fact have merged to /w/ in most varieties of Southern British English and General American English.

Labov (1994, 311-312) points out that reversal of a merger has never been observed on an historical level. However, in dialect acquisition, the acquisition of a new category that contrasts with other categories – essentially, the reversal of a merger in this instance – is possible.

2.6.4.2 A New Distinction Between Underlying Segments

In the evolution of a language, one of the more common ways of introducing a new segment into a phonological system is by the loss of a conditioning factor. The loss of rhoticity in SBrE introduced several new distinctions between underlying segments (Giegerich 1992, 62,65-66).

According to standard accounts (e.g. Wells 1982; Kamińska 1995; Mohanan 1985), the first stage in the loss of rhoticity was the breaking and laxing of tense vowels before /r/. So, for example, the combination /ir/ became /ɪər/. The next stage in the loss of rhoticity was the deletion of /r/ in syllable rhyme. In other words, /r/ was deleted after a vowel and before a consonant or a pause. Despite the loss of /r/, the lax vowel and off-glide remained[72].

[71] The pairs /ʍ/ and /k/ or /w/ and /v/ are also contrasting.

[72] Any further arguments regarding (r) are beyond the immediate scope of the current section. The phonological status of (r) as well as the evolution of non-rhoticity is discussed in depth in chapter 7. Non-rhoticity is only mentioned here as a possible example of a potential type of difference in underlying categories.

Without a governing environment, these vowels became phonologised. This phonologisation of the centring diphthongs introduced a secondary system into the system of underlying segments of SBrE: former combinations of a tense vowel followed by /r/ became centring diphthongs.

In acquiring a new distinction between underlying segments, the dialect learner must discover which words change their underlying lexical representations as a result of the presence of a new segment i.e. which words have the new sound and which remain unchanged. In extracting an inventory of underlying segments from the lexicon, the dialect learner must discover what new contrasts exist between the segments, how the segments relate to one another (e.g. the (re-)formation of natural classes) and what phonological operations can be performed on the new sound. It is for this reason why the acquisition of new distinctions involving the underlying segments is predicted to be less successful than the acquisition of merging categories. There are no rules to learn; there are no minor articulatory changes to be made in a restricted, context-defined environment. Instead, the learner must learn the distinction from scratch rather than make adjustments to the existing D1 phonological rules and output realisations. Assuming the dialect learner maximally manipulates existing phonological structure in the dialect acquisition process, there are fewer available structures at the underlying level: just the underlying representation of the segment. This contributes to the low degree of change that is expected in the acquisition of underlying differences.

The phonologisation of centring diphthongs makes rhoticity an underlying difference between SBrE and GA. However, there are also realisational and rule-based differences in the treatment of syllable-rhyme /r/ between the two varieties. An example of an underlying difference without any additional realisational differences is the merger or distinction of the vowels represented by *caught* and *cot*, which is discussed in chapter 6. It is argued that underlying differences, being the most phonologically abstract, are the least successful to be acquired. Furthermore, the acquisition of rhoticity or non-rhoticity – studied in chapter 7 – entails an entire sub-system of underlying representations as well as realisational differences. It is further predicted that the acquisition of rhoticity or non-rhoticity has the least successful results.

2.6.5 Dialect Acquisition Within the Phonological Framework

The first phonological features that are likely to undergo change are those that differ only at the realisational or output level. Contextual differences and new rules are proposed to be the next

likely to be acquired in a second dialect. The least likely differences to be acquired are those that vary between the dialects at the underlying level.

Regardless if the manipulation is in the input, the output, in the governing environment or in any combination of the three, it is a D1 structure that is exploited in the approximation of the D2. Given a choice of acquiring a new structure or manipulating an existing structure, it is shown that the latter option is taken first, assuming there is enough similarity between the D1 form and the target form.

2.7 Other Comments on the Acquisition of Second Dialect Phonology

2.7.1 Shanta David

One of the main aims of David's (1985) thesis is to determine the natural order of phonological acquisition, if any. David concludes that a natural order for the acquisition of a second language phonology is dependent on the first language. No generalisations about the acquisition of a second language phonology can be made with respect to dialect acquisition. However, since the phonologies of *dialects* are similar, she suggests that maybe an order is possible. While her data cannot confirm anything specific, there is one feature in her data that is consistently acquired first and one feature that is never acquired.

David examines five phonological features of General Indian English that differ from General American: plosive aspiration; velarisation of /l/; the presence of interdental fricatives; rhoticity; and the diphthongisation of the mid vowels /e/ and /o/.

The D1 of her participants is non-rhotic. Rhoticity was a feature that was hardly ever used by the younger participant, age 7, even at the end of the twelve weeks of investigation. The older participant, age 11, maintained r-lessness. It is demonstrated in several studies that rhoticity is a difficult feature to acquire (Trudgill 1986; Chambers 1992). The underlying segment /r/ is governed by a phonotactic constraint (Giegerich 1992, 61ff., 162). The phonotactics of a language are concerned with

> how the phonemes of that language can be put together to make well-formed syllables and words: what consonant clusters are permissible; what sequences of vowels and consonants; and in what positions within words and syllables are these clusters and sequences allowed (Giegerich 1992, 151).

A phonotactic constraint, then, is a constraint on the syllable structure and what constitutes a well-formed syllable in a language. Broselow (1984; 1987a; 1987b) shows that phonotactic

constraints from the first language are often transferred into the interlanguage. These findings indicate that differences in permissible syllable structure are not easily acquired in second languages or – as this thesis shows – in second dialects. It is additionally argued in chapter 7 that the difference between a rhotic and a non-rhotic dialect is a distinction at the underlying level, adding to the complexity of acquisition.

In GA, the underlying segment /l/ has two realisations: in syllable onsets, there is a 'clear' alveolar [l][73]; in syllable rhymes, /l/ is realised as a dark, more velarised [ɬ][74] (Olive, Greenwood, and Coleman 1993, 204-216; Wolfram and Johnson 1982, 21-22). General Indian English has a similar phonological distribution for /l/, except that in syllable rhymes, the GIE realisation of /l/ is retroflex [ɭ]. This is due to the influence of the Indian languages on the speakers of GIE. The participants quickly acquired the dark [ɬ] in lieu of the retroflex [ɭ]. The phonological environment governing /l/ is the same in both dialects: syllable rhyme. Only the surface representation differs. This is a realisational difference, as defined above in section 2.6.1. So, while there is no definite order of acquisition, simple realisational differences are acquired before other types of differences. David's findings and cursory observation of the data collected for this thesis led to the hypothesis presented in section 2.4. The data for the other phonological features is too inconsistent to draw any reasonable conclusions.

David claims that vowels are acquired before consonants in first language acquisition. She assumes that the process is the same in second dialect acquisition. Not taking syllable-rhyme /r/ into account, there is no difference in the acquisition process between vowels and consonants in her data.

David's older participant produced more instances of the D2 initially. At the end of the twelve weeks, the younger participant showed more D2 phonological features than the older subject. This is consistent with SLA literature concerning the critical age (see, for example (Sekiya 1988) for a review of such literature, as well as section 2.3.1).

David elicited data from her participants using a reading passage, and then a discussion of the passage immediately afterwards. This was intended to examine dialect acquisition in a formal and a casual style. There was no significant difference in the success of acquisition between formal and casual styles. However, any rhotic realisation of syllable-rhyme /r/ occurred only in the casual setting.

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[73] Onset /l/ is velarised, but not to the same degree as in syllable rhymes (Shockey, p.c.; Olive, Greenwood, and Coleman 1993, 204-216). However, there is still a 'clear' ~ 'dark' distinction between onset /l/ and rhyme /l/ in GA.

[74] In some cases, the syllable-rhyme /l/ is [– consonantal], discussed in sections 4.2.1.4 and 4.2.1.2.

There were six phonological features, two styles and two participants providing the data in this experiment. While it is a good case study, no firm conclusions about the acquisition of phonological features can be made.

2.7.2 Arvilla C. Payne

Payne (1980) approaches the acquisition of the phonology of a second dialect in terms of reorganisation and restructuring of phonological rules. That is, insertion of rules into a grammar, and changes to existing phonological rules, respectively. Payne uses naturalistic, vernacular data to draw her conclusions. Most emphasis is placed on the Philadelphia short-*a*.

The rule governing Philadelphia short-*a* is very complex. There are two conditions that govern the tensing and raising of /æ/ in addition to three 'affective adjectives', *mad*, *bad* and *glad*, in which the tense realisation is found. There are several exceptions to these rules, and /æ/ can variably be tensed and raised in at least three environments (Payne 1980, 158-159).

Payne looks at speakers from three different dialect areas that have moved to King of Prussia, a suburb of Philadelphia. One group is from New York City, where the rules governing short-*a* form a subset of the Philadelphia phonology. This group is most successful in acquiring Philadelphia short-*a*. The New York children only had to learn a few exceptions to their own phonological rules. Because of this, several children, whose age of arrival ranged between eight and fourteen, were able to acquire the Philadelphia sound patterns.

At the opposite extreme, speakers from the Northern Cities (from western New England to the Great Lakes area) were not successful in acquiring the Philadelphia short-*a*. Such speakers have to learn every rule governing Philadelphia short-*a*. Some children born in King of Prussia to out-of-state parents did not acquire the Philadelphia pattern either, or only partially acquired the rules of short-*a*. Payne explains that there is parental influence on dialect up to age four.

Payne suggests a critical age of four to six years old. After the age of eight, there is only partial acquisition. In terms of SLA, the phonology fossilises. Acquirers tend to over-generalise phonological rules and not learn the various exceptions. However, the phonology of the first dialect can be manipulated up to the age of fourteen, but that depends on the similarity or simplicity of the phonological structures of the two dialects.

Payne explains that there is not a rapid acquisition of second dialect forms unless there is a highly stigmatised feature of the first dialect. This is particularly true for children older than

age six. Trans-Atlantic dialects have some stigmatised features[75] and complex phonological rules[76] that differentiate them from one another. Thus, Payne's findings could prove useful.

2.7.3 J.K. Chambers

Chambers (1992) summarises a longitudinal study of six Canadians who moved to the south of England and began acquiring a second dialect (see also Chambers 1995b; Chambers 1988). Chambers interviewed the participants on two occasions with a two-year interval between the interviews. In this way, Chambers was able to map the progression of dialect acquisition over time.

Chambers examined three types of dialectal differences: pronunciation variants; lexical variants; phonological variants. Pronunciation variants, as has been discussed, are individual words that vary only slightly in pronunciation between dialects such as *tomato* and *banana*. Pronunciation differences are referred to as lexical differences in this thesis. Lexical variants, by Chambers's definition, do not have similar phonological shape. An example of such a lexical variant would be *sweater* or *jumper*. This thesis does not examine Chambers's definition of 'lexical' variants. A phonological variant is the type of variant that has been outlined in section 2.4. A phonological variant is the result of a difference in underlying categories, phonic inventories, phonological rules or a combination of these. In this thesis, phonological variants are specifically referred to as realisational, lexical, rule-governed or underlying differences.

Examining these three types of differences in second dialect acquisition – that is, pronunciation, lexical and phonological variants – Chambers proposes eight hypotheses. These hypotheses are outlined in table 2.1 and discussed below.

Chambers uses a fairly concentrated group of participants. His participants are six Canadian youths whose age upon arrival to Oxfordshire range from nine to seventeen years. His control participants, who are native to Oxfordshire, are the same age and sex as the informants. The controls help account for low frequency of particular words or patterns, as well as give an accurate account of the target dialect.

Chambers reports on the elicited data he collected from picture cards and word lists. The cards and lists are used for comparing the progress of acquisition among individuals over time and to account for individual speaking style. These types of tests make subjects highly conscious of their own speech (Chambers 1992, 676). Chambers assumes that any of the SBrE

[75] The most notable stigmatised feature is intrusive-r, discussed in sections 7.2.4, 7.3, 7.4.1.1 and 7.4.2.1.

[76] Rhoticity, chapter 7 and the BATH lexical set, chapter 5 are differences between the dialects entailing complex phonological rules.

(8) Lexical replacements are acquired faster than pronunciation and phonological variants.

(9) Lexical replacements occur rapidly in the first stage of dialect acquisition then slow down.

(10) Simple phonological rules progress faster than complex ones.

(11) Acquisition of complex rules and new phonemes splits the population into early acquirers and later acquirers.

(12) In the earliest stages of acquisition, both categorical rules and variable rules of the new dialect result in variability in the acquirer.

(13) Phonological innovations are articulated as pronunciation variants.

(14) Eliminating old rules occurs more rapidly than acquiring new ones.

(15) Orthographically distinct variants are acquired faster than orthographically obscure ones.

(Chambers 1992, 677-700)

Table 2.1: Chambers Eight Hypotheses

features that his participants produced are "those that they could no longer control or suppress" (1992, 679), even when speaking to another Canadian English speaker.

Chambers (1988) discusses phonological variants. He examines the absence or presence of five dialect-specific phonological features in each of his informants. Absence of a feature implies loss of a feature from the first dialect, Canadian English, even though the loss may actually be the acquisition of a phonological feature that excludes something of the D1. Presence implies acquisition of a feature from the second dialect, SBrE.

The five phonological features Chambers studies are the same phenomena that are examined in this thesis. The first feature is the tapping of medial /t/. The second feature Chambers examines is the SBrE distinction of the vowels represented by the words *caught* and *cot*, which are merged in Canadian English. The third feature examined is what Chambers called Middle English short-*a* backing. This phenomenon refers to the different values for the feature [back] of the vowel in the BATH lexical set. The fourth and fifth phonological variants Chambers examines are rhoticity and intrusive-r, respectively. All of the phonological variables mentioned in this review of Chambers are described in much more detail in the analysis chapters[77].

Chambers (1995b) examines the acquisition of lexical and pronunciation differences. The five words used to test acquisition of pronunciation differences are *garage*, *half*, *banana*, *tomato* and *yoghurt*. The first two words in the list, *garage* and *half* may not be pronunciation differences. The lexeme *garage* is subject to a supra-segmental phonological rule that is

[77]The analyses are presented in chapters 4 through 7.

different in the two dialects. The vowel in the word *half* is in the same environment as the vowel of the BATH set. It might be hasty to treat these two items simply as pronunciation differences.

It would be appropriate at this point to address each of Chambers's hypotheses. However, this thesis only examined phonology in dialect acquisition. Therefore, the first two of Chambers's hypotheses, (8) and (9) are not discussed.

2.7.3.1 Simple phonological rules progress faster than complex ones (10)

This hypothesis is intuitive. However, Chambers's examples of 'simple' and 'complex' are not quite appropriate.

Chambers uses t-voicing and r-lessness to support this hypothesis. He also uses these features to support his claim about the role of orthography. However, speakers of SBrE easily acquire the GA t-voicing rule and maintain r-lessness (Trudgill 1986, 19-20).

Tapping is considered simple because there is only one output realisation in one fairly simple environment. It should be noted, though, that the environment in which /t/ is tapped is not as simple as Chambers described, which is 'intervocalic, post-tonic' (Chambers 1992, 682)[78].

Chambers determines that complex rules are relative to the varieties under investigation. This implies that, rather than a discreet division between simple and complex, there is a continuum. Historical phonological rules with unrelated conditioning environments that have become lexicalised over time – for example vowel backing – may be found towards the complex pole of this continuum. Chambers classifies the dialectal difference of the BATH vowel as a complex rule to acquire. For Canadian English speakers acquiring the SBrE BATH lexical set[79], /æ/ becomes [ɑ:] before voiceless anterior fricatives and before nasals followed by obstruents, although there are numerous exceptions. These two governing environments are unrelated: fricatives and nasals alone hardly form a natural class; voiceless fricatives and nasals have different values for the features [voice], [sonorant] and [continuant]. Nasals must be followed by an obstruent whereas the spirant can be followed by a consonant (e.g., *past*), a vowel (e.g., *passing*), or nothing at all (e.g., *pass*)[80]. Combined with these unrelated environments are numerous exceptions – e.g. *can't* [kɑ:nt] vs. *cant* [kænt] – making the acquisition of the SBrE

[78] See chapter 4 for details on the environment for tapping of /t/.

[79] The BATH vowel is discussed in fuller detail in chapter 5.

[80] The morpheme boundary adds another complication to the rule.

BATH vowel rather complex and, following Chambers, difficult to acquire. Towards the simple pole of Chambers's continuum are primitive processes like t-voicing.

Also according to Chambers, the loss of rhoticity is considered a simple rule because /r/ is categorically deleted before consonants and pauses. This description of syllable-rhyme /r/ is shown to be inadequate in chapter 7. Yet, both tapping and the BATH vowel progress faster than the acquisition of non-rhoticity in Chambers's study as well as in this thesis.

This hypothesis needs to be stipulated by the type of phonological difference rather than a subjective definition of 'simple' and 'complex'. It seems to be confirmed in this thesis that realisational differences progress faster than rule-based differences and that simple differences in underlying structure progress faster than complex differences in underlying structure. The major stipulation for this thesis, of course, is that realisational and contextual differences progress faster than underlying differences.

2.7.3.2 Acquisition of complex rules and new phonemes splits the population into early acquirers and late acquirers (11)

Chambers presents the concepts of 'early' vs. 'late' acquirers in this hypothesis. Younger participants consistently produce more D2 items than the older participants, particularly with respect to complex rules and new vowel categories. However, two of Chambers's participants are aged thirteen, and one performs as a late acquirer and the other as an early acquirer. This demonstrates that the critical age varies from person to person.

Although the critical age hypothesis is not explicitly tested in this thesis, a critical age, or some other sort of maturational constraint is assumed. The main reason for making this assumption is that, at first glance, the data from Chambers and from this thesis support such an assumption. The data seem to suggest and division between 'early' and 'late' acquirers, thereby validating this hypothesis of Chambers, bearing in mind the modified definition of 'complex'. In the data collected for this thesis, for example, there were some older participants – i.e. 'late' acquirers – who acquired the D2 BATH vowel because it is a rule-based difference, despite the fact that, according to Chambers, it is complex.

The acquisition of underlying differences seems to be constrained by a critical age. This includes mergers as well as distinctions. In concurrence with Chambers, age is not the only factor in distinguishing a late acquirer and an early acquirer. It is shown in a case study of the acquisition of the THOUGHT $\sim$ LOT merger (see section 6.4.3) that an older participant had acquired the merger more completely than a younger sibling.

Both participants were younger than the proposed 'critical age' upon first exposure to GA, but the younger participant has the acquisition habits of a late acquirer. Although age is an important factor in all aspects of dialect acquisition, it seems, to use Chambers's terminology, to affect complex phonological rules more than lexical items or pronunciation differences.

2.7.3.3 In the earliest stages of acquisition, both categorical rules and variable rules of the new dialect result in variability in the acquirer (12)

Again, this hypothesis in intuitive. Nothing is acquired spontaneously. A dialect learner needs to discover if a given difference forms a pattern or is lexical[81]. It is shown that variability continues throughout the acquisition, not just in the early stages process, even for some categorical rules like the tapping or lack of tapping of ambisyllabic /t/.

2.7.3.4 Phonological innovations are actuated as pronunciation variants (13)

This hypothesis is an extension of the previous hypothesis. In a lexical difference – using Chambers's terminology, a pronunciation variant – there is no rule that can determine the difference between a form that varies between the dialects. In the early stages, a dialect learner does not know if a difference is rule-governed or lexical. Complex phonological rules "are actuated by the acquisition of particular instances of the new rule or phoneme," these instances being treated as pronunciation differences. Then, "they only become rule-governed or systematic... after a critical mass of instances has been acquired" (Chambers 1992, 693). Prior to the critical mass, the differences are only lexical so the acquisition of a given phonological phenomenon as a whole is variable. This is the concept of lexical diffusion, which is fundamental in language change and language acquisition (Wang and Cheng 1970; Cavalli-Sforza and Wang 1986; Chambers 1988, 174-180).

Chambers (1988) suggests that the acquisition of phonological rules follows an S-shape. The progress of acquiring a phonological rule is slow in the beginning, the items being treated as an individual pronunciation difference. A critical mass is achieved after 20% of all possible instances of these 'individual' pronunciation differences are pronounced correctly in the D2. These pronunciations are grouped together and a phonological rule is developed. There is a rapid rise from 20% to 80% of correct utterances of a certain rule. A rule is essentially acquired once the speaker reaches the 80% point. The process then slows down again, with

[81] Lexical in the broader sense of unpredictable differences, as opposed to Chambers's definition of different words representing the same thing.

the last 20% or so possibly remaining as remnants of the D1. With the exception of intrusive-r, Chambers' informants either produced 20% or less of the SBrE variant, or they produced 80% or more. There are no scores in the middle range. It is using this basis of lexical diffusion that 75% usage was defined as acquisition of a particular phenomenon in this thesis.

Chambers's participants do not produce many of the D2 pronunciation variants. Even at the second interview, there is only a nominal increase in the use of D2 pronunciations. Despite the role of pronunciation variants in the acquisition of phonological rules, it would seem that these types of lexical differences are resistant to change. Perhaps with there not being enough similar instances to constitute a critical mass, generalisations about pronunciation differences cannot be made and thus their production is inconsistent.

2.7.3.5 Eliminating old rules occurs more rapidly than acquiring new ones (14)

Chambers uses two phonological variables to support this hypothesis. The first is the voiceless realisation of medial /t/. The data of this thesis shows that there is no difference in the degree of interdialectal change or the success in the loss of tapping medial /t/ as compared to acquisition tapping. However, Chambers (1995a, 248-249) concedes that t-voicing is representative of a natural, perhaps primitive, linguistic phenomenon, common to many languages. This helps explain the facility of acquisition of this variable, whether it is the tapped realisation or the voiceless realisation.

Likewise, there is little difference in the acquisition of the THOUGHT∼LOT distinction as compared to the merger. Chambers regards the production of an SBrE-like distinction between /ɔ:/ and /ɑ:/ as a loss or absence of a merged form. According to Chambers, the lack of a merger indicates accommodation towards SBrE. He suggests that the merger is being eliminated in the interdialect. Using this same train of though then, an SBrE speaker acquiring Canadian English would be acquiring a merged form rather than losing a distinction. This hypothesis – or at least Chambers's presentation of this hypothesis – prevents the following postulation: Canadians moving to England have to acquire a distinction between /ɔ:/ and /ɑ:/[82] and SBrE speakers moving to Canada lose the distinction.

Although this hypothesis seems intuitive, considering the counter-examples of /t/ and /ɔ: ∼ ɑ:/, it may not apply to Chambers's study as he presented it, or an extension of that study, such as this thesis. In this thesis, it is proposed that there is no loss of rules, mergers, features, etc. Instead, every interdialectal change is a form of acquisition. Any 'elimination'

[82] This is, in fact, argued in chapter 6 and presently.

comes as a direct result of the acquisition – or the attempt to acquire – of a dialectal difference. The following examples will show how this approach is a slight departure from an SPE-like generative phonological framework.

Regarding the /ɔː ~ ɑː/ vowels, Canadians would be acquiring a vowel distinction that does not exist in their native dialect. Native SBrE speakers have to acquire a vowel merger (see Labov 1994, passim). In both cases, each group is acquiring a new system of relationships and contrasts between the members of the underlying vowel inventory.

With respect to /t/, in this thesis, the Canadians or native speakers of GA have to acquire a voiceless realisation of [t] medially. Although this equates to the loss or suppression of tapping, a voiceless [t] is not normally associated with /t/ in this phonological environment. Some sort of active acquisition must take place. Native SBrE speakers, on the other hand, have to acquire tapping. In both cases, each group is acquiring a new realisation of /t/ in intervocalic position.

Syllable-rhyme (r) is also a target for acquisition for both groups. According to Chambers, native SBrE speakers acquiring GA would be suppressing a rule of r-deletion. Not in this thesis: in this thesis, native SBrE speakers have to acquire rhoticity. By the same token, native GA speakers have to acquire non-rhoticity as opposed to lose rhoticity. Using Chambers's interpretation, it could be argued that native GA speakers have to acquire an r-deletion rule. For both groups of speakers, there is active change with respect to /r/ in syllable rhymes. In this thesis, this active change, whether it ultimately ends with [r] in syllable rhymes or [ə], represents acquisition not loss.

2.7.3.6 Orthographically distinct variants are acquired faster than orthographically obscure ones (15)

The data collected for this thesis entails reading. Therefore, the participants must be literate. However, the role of orthography, and thus Chambers's final hypothesis, is not systematically treated in this thesis.

To support this hypothesis, Chambers compares the high success rate in the 'loss' of t-voicing to the low success rate of the acquisition of non-rhoticity[83]. Even prior to any analysis, it was noted very early in the data collection that the acquisition of rhoticity ('orthographically distinct') had a much lower degree of interdialectal change than the acquisition of tapping ('orthographically obscure') by native SBrE speakers. Likewise, it was

[83] Conceivably the acquisition of non-rhoticity equates to the 'loss' of rhoticity.

also noted that the acquisition of voiceless [t] progressed far more rapidly than the acquisition of non-rhoticity. The detailed analyses of /t/ and /r/ bear these brief observations out.

The two counter-examples of /t/ and /r/ immediately reject Chambers's hypothesis about orthography (15). Orthography, as Chambers presents it, seems to have very little impact in second dialect acquisition. For that reason, the issues of orthography and literacy is not examined in this thesis[84].

The only orthographically relevant difference, perhaps, is the acquisition or 'loss' of intrusive-r. Orthography is what native SBrE speakers have used to determine that the liaison of pre-vocalic /r/ is 'intrusive' or 'linking'. The stigma against intrusive-r is based on standard English orthography[85], even though 'intrusive-r' and 'linking-r' occur in the same phonological environments.

2.7.3.7 Summary of Chambers's hypotheses

Most of Chambers's hypotheses seem intuitive. However, it is shown that some of the terminology should be changed or that certain stipulations should be made to the hypotheses, such as the definitions of 'simple' and 'complex'. Other hypotheses, particularly the hypothesis about the loss of rules (e.g. the loss of a merged vowel for *caught* ~ *cot*) progressing faster than acquisition (e.g. the acquisition of r-deletion), do not seem to be valid at all.

In his conclusion, Chambers admits that there is not much empirical depth in the field of second dialect acquisition. Thus, he encourages replication of the study. It is with that invitation that this study was initiated. However, this thesis is not an exact replication of Chambers.

First of all, this is not a longitudinal study. The data collected covers different ages of arrival and lengths of residence. This thesis does not look at time factors in dialect acquisition. The factor of age only receives minor discussion. There was only one interview per participant conducted in this thesis. Instead, this thesis examines stages of acquisition in terms of successful acquisition.

Secondly, this thesis concentrates strictly on the interdialectal development of a second dialect phonology. Lexical differences, including pronunciation variants, are not examined. Even though pronunciation differences are phonological, they are not rule governed nor do they

[84] Undoubtedly, there is a link between orthography and phonology. See, for example, S. Montgomery (2001), Derwing et al (1987), O'Grady et al (1996, 613- 619).

[85] Intrusive-r is discussed in sections 7.2.4, 7.3, 7.4.1.1 and 7.4.2.1.

interact at a systematic level. Thus, the first two of Chambers's hypotheses are not addressed in this thesis.

Chambers only looked at Canadians living in the south of England. It was mentioned earlier that such data led to hasty conclusions about medial-t tapping and rhoticity. This thesis examines Americans living in the London area. Additionally, this thesis examines English families living in North America. It is hoped that by looking at both groups rather than making conclusions specific to one group, conclusions that are more general can be drawn.

This thesis replicates the basic methodology of Chambers. It also indirectly addresses his five hypotheses on the acquisition of a second dialect phonology. However, this thesis has a slightly different perspective and therefore slightly different goals.

2.8 Summary

The background framework of this thesis draws from many sources. The concept of interdialect is based heavily on Selinker's original exposition of interlanguage (1972). Interlanguage, in turn, was greatly influenced by the Contrastive Analysis Hypothesis (Lado 1957). Contrastive analysis in general, as opposed to the CAH specifically, is once again common in second language acquisition research. This thesis employs a contrastive analysis.

The reason for using an interlanguage/contrastive analysis is twofold. The interlanguage model allows for an exploration of the interdialect, to determine its form, structure and its role. With an IL/CA analysis, it is easier to show that the phonology of a second dialect is acquired by maximal manipulation of the native dialect.

The phonology is described in generative terms. A generative framework discusses phonology in terms of underlying representations, surface or output realisations and the phonological rules that link them. This, in turn, allows the hypothesis of realisational and contextual differences being more likely to undergo interdialectal change than differences in underlying representations.

This thesis also draws on the major studies on the acquisition of second dialect phonology of English. The results from David (1988), for example, inspired the proposition distinguishing between realisational and underlying differences in the acquisition process. Payne's (1980) discussion of re-ordering and re-structuring of the phonology led to the proposition of maximal manipulation of native dialect structures. Additionally, Payne's analysis of the acquisition of Philadelphia short-*a* inspired a detailed examination of complex differences by breaking the differences down into component parts. Chambers (1992, 1988, 1995a) provided the initial

idea that spawned into this thesis. In addition to the idea, though, the base hypotheses, the data collection and the general methodology found in Chambers's study can also be seen throughout this thesis.

Chapter 3

Experiment Design and Methodology

3.1 Data Collection

This thesis examines the idiolects of individuals that have moved from the United States to the London area or from England to North America. Based on documented sources of dialectal data, the examination of the idiolects focuses on the changes that have occurred and any patterns found in those changes.

In the initial sessions of collecting data for this thesis, it was quickly noted that children demonstrate considerably more interdialectal development than adults. It was assumed that a critical age factor was contributing to these observations (see section 2.3.1). Based on these initial observations and on the basic premise of the critical age hypothesis that "younger is better" (Flege 1999), it was decided that children should be the primary participants of this study. Children are under the most peer pressure from school to accommodate. Due to their age they are capable of acquiring the phonology of a second variety, often fluently (Long 1990; Chambers 1992; Payne 1980). The children in this study range from the age of five to eighteen years old at the time of the interview. Their age of arrival ranges from birth to nine years old and their length of residence ranges from six months to nine years.

Although adults may not have phonologies that are as easily manipulated as children's, they still can accommodate towards the second dialect. That is, they modify the most salient features of their own accent so as to minimise the difference between their native dialect and what is spoken by native speakers of the second dialect (Giles and Coupland 1992; Giles 1973; Giles and Smith 1979; Giles and St. Claire 1979).

Long-term accommodation can lead to "nonephemeral acquisitions" (Chambers 1992, 675) in adults as well as children. Chambers speculates that continual, long-term accommodation can ultimately lead to permanent – or, in his terms "nonephemeral" – acquisition in adults as well as children (1992, 675). Chambers presumes that accommodation – in this case, dialect convergence – can be one strategy used in the dialect acquisition process (see also Trudgill 1986, passim). While children are the primary informants of this study, data from adults who speak with a mid-Atlantic dialect is used to support the data obtained from younger speakers. Any D2 features that are partially acquired help reveal how changes occur to an individual's phonology in dialect acquisition.

3.1.1 Recording Environment

Several types of data are used for examination in this thesis. The interviews with the participants vary from fairly natural conversations to elicitation tasks. The recording was conducted in the house of the participating family. This provides surroundings that were more familiar to the participants than a recording studio, as well as being far more practical[86]. All of the interviews were recorded on digital audio tape (DAT) using a Sony DAT recorder, model TCD-D7. For group recordings, two Optimus (Tandy) omnidirectional boundary microphones, model 33-3020, were used. For the individual recordings, an AKG model C 567 E1 lapel microphone was used. The DATs were then converted to CD in order to allow for transcription and acoustical analysis.

3.1.2 Group Recording

The interview began with a group conversation where all, or at least most members of the family were present. It was intuitively felt – even before the first data were collected – that the group setting would allow the family to become comfortable with the presence of the recording equipment and – more importantly – comfortable with the presence of the interviewer. The group setting also allowed for the interviewer to briefly get to know the members of the family. This was strictly an intuitive decision, not based on any prior research. There is no way to measure if the group recording was useful or not or if the individuals were comfortable in the presence of a microphone and a stranger.

[86] It should be mentioned that the interviewer always wore a suit to the recording sessions and that the attire may have affected the perceived formality of the situation.

Open-ended questions were asked to start and continue the group conversation. There were general questions asked concerning what the family does together as a group, the length of their residence abroad and how the family finds living in the foreign country. The data are not expected to be very interesting from this portion of the interview, although there is the possibility that the children speak with a different register or accent in the presence of their parents than when they are with the interviewer alone.

The family then evaluated various dialects. The participants listened to the same one-minute passage read by six women. Based solely on what they heard, the participants judged the speaker's friendliness and trustworthiness using a graded scale of one to five. The participant was also asked to try to identify the nationality of the speaker.

The dialect evaluation was a means to evaluate language and dialect attitudes. Chambers (1992; p.c.) failed to obtain any useful results from the dialect evaluation. This thesis managed to replicate the failure of the dialect evaluation. Language attitude was, instead, measured at the end of the interview. The interviewer asked questions like "how do you like living in Britain/North America?" Unfortunately, most of the responses, like the measured evaluations, showed a certain amount of ambivalence towards the second dialect[87].

After recording the family as a group, interviews were conducted with individual members of the family. Most of the time, the parents were interviewed first, so they would be able to observe the procedure and give their approval or raise any concerns. In case of interviewing a shy child, a child with limited reading abilities, or other such circumstances, a parent might have been present during the recording. When this happened, the child was always asked to do the second elicitation exercise, which is identifying pictures and reading the accompanying numbers. The child was also asked to read as much of the phrase list and reading passage as possible. The results from an accompanied child are dealt with on an individual basis later.

3.1.3 Phrase List

The individual interviews begin with the subject reading a phrase list. This phrase list is used for testing the acquisition of specific phonological features that are detailed in the following chapters. The list is based on the one Chambers (1988, 651) devised. Since it was originally intended to include an examination of dialect acquisition with respect to Scottish Standard English, certain phrases were added to the phrase list.

[87] One response – "I just don't like the English accent" by participant JEC – provided a highly reliable gauge to language attitude, even though the response was delivered in natural, native-like SBrE.

Chambers (1988, 659) reports that the order in which tokens eliciting intrusive-r are presented in the phrase list may have effected the results. A participant would utter an intrusive-r in appropriate places towards the beginning of the exercise, but in later phrases, intrusive-r was suppressed. This was only found for native SBrE speaking control participants both in Chambers' study and in the pilot study of this thesis. The effect of the presentation order of the tokens was noted. Two or more phrase lists were considered, but ultimately rejected, in part to follow the replication of Chambers (1992) and in part to keep the data analysis simple[88].

spring and summer	Cuba and France	birthday greetings
north and south	Don and Dawn	strawberry blond
urban and rural	Lisa and Daniel	say boo to a goose
city and country	phase and fade	a killer whale
the Earl of Erol	gnawed and nod	breathe and breed
what is a watt	sighed and side	Michael the archangel
	monarchy and anarchy	
metal and plaster		forty brass monkeys
sofa and couch	hot water bottle	a naughty tot
painting and drawing	bubble bath	the bird sat on the kerb with fur
reading and writing	a lawn cot	caught in a knot
laughing and dancing	the branch of a plant	automatic transmission
soup is good food	a partridge in a pear tree	rotten, raw eggs
pull it through the pool	jolly St. Paul	brewed and brood
beads and bees	parochial school	lots of hawks by the loch
	wait for a while	the prettiest girl in the class
	what do you look like	the slaughter of the Scots
	put the books in the boot	which witch
	buys and bide	

Table 3.1: Phrase List

However, there seemed to be an ordering effect in the experimental participants rather than the control participants. This is discussed in section 7.4.2.1 below. Unfortunately, since there was only the one phrase list, it cannot be determined if there, indeed, was an effect caused by the order in which the tokens were elicited or if there were other phenomena affecting the results.

The phrase list is a means of eliciting citation forms. Citation forms show if a feature has been acquired in a very formal, highly monitored register (Chambers 1992, 676). The short phrases isolate one or two segments within a restrictive phonological environment. List intonation may affect some utterances, but sentential stress, discourse intonation and other prosodic features are not contributing factors.

[88] It was the original intention of this thesis to study North Americans living in England and in Scotland, as well as Scots and English living in North America: this is four groups and at least eight lists. Thus, the one list was considered to be far simpler to conduct the analyses.

3.1.4 Picture Cards

After the phrase list, the participant named items from a series of picture cards. They were asked to read each number and name each item. Older participants, particularly adults, were asked to name each item with the first appropriate word that comes to mind. This may have suggested the point of the task, but the instructions were intended to pre-empt questions about which variant was being sought[89]. There were seven cards with forty pictures in total. Twenty-five of the pictures elicit words that are different between SBrE and GA but have the same semantic content. This list is meant to elicit words that are fairly representative of the bulk of lexical differences between SBrE and GA. It must be noted that the words *stove* and *sweater* have some distribution in SBrE. Also, some monodialectal speakers of GA use the term *Wellies*.

In addition to the twenty-five differences at the word level[90], five pictures are used to elicit pronunciation variants: 11) *garage*, 16) *half*, 20) *banana*, 22) *tomato* and 23) *yoghurt*; that is, words with the same semantic content and a very similar underlying lexical representation. By making a division between 'pronunciation' and 'phonological' differences, Chambers implies that, although these five words are pronounced differently in SBrE and GA, the variation is not due to any rule. It is only for the last three items in this list for which this claim holds true. The stress pattern in the word *garage* is different in GA and SBrE due to a phonological rule governing two-syllable French loan words. Since this rule is not tested elsewhere in the elicitation tasks, *garage* is treated as a single lexical difference. The vowel in the word *half* comes before a voiceless anterior fricative, which is one environment for vowel backing[91]. Hence, in the statistical analyses, *half* is counted among the other words used to test vowel backing rather than as a pronunciation difference.

There are also ten items in the list that serve as blinds. In Chambers's (1992) study, these items were meant to distract the participants' attention away from the purpose of the task. It must be said that these blinds were not very successful as distractions in this study.

This thesis focuses on the acquisition of phonology. While the participants are concentrating on identifying the pictures, they are meant to be distracted away from their pronunciation. The choice of British or American lexical item is, for the most part, ignored, since there is no useful phonological data. For example, item 21, neither *chips* nor *French fries* provide any data for the phonological variants being studied in this thesis. However, item

[89] Such questions were occasionally asked, anyway, regardless of the prompting.
[90] Items on the left of the '/' are SBrE variants items on the right are GA variants.
[91] See chapter 5 below.

Page 1
1) coach / bus
2) bicycle (blind)
3) caravan / (house) trailer
4) sledge (or sled) / sleigh
5) estate car / station wagon
6) hand brake (blind)

Page 2
7) windscreen / windshield
8) bonnet / hood
9) boot / trunk
10) queue / line (up)
11) garage
['gæ.ɹɑ(d)ʒ] or ['gæ.ɹɪ(d)ʒ] / [gə.'ɹɑ(d)ʒ]

Page 3
12) dustbin / garbage can
13) scissors (blind)
14) cooker / stove
15) coffee maker (blind)
16) half
[hɑ:f] / [hæf]
17) spanner / wrench

Page 4
18) corn on the cob (blind)
19) pineapple (blind)
20) banana
[bə'nɑ:nə] / [bə'nænə]
21) chips / (French) fries
22) tomato
[t^{h}ə'mɑ:təʊ] or [t^{h}ə'matəʊ] / [t^{h}ə'meɪɾoʊ]
23) yoghurt
['jɒgət]or ['jɔgət]/['joʊgɚt]

Page 5
24) pushchair / stroller

25) cot / crib
26) high chair (blind)
27) pram / baby carriage
28) nappy / diaper

Page 6
29) vest / undershirt
30) cap (blind)
31) (hand)bag / purse
32) jumper / sweater
33) trousers / pants
34) slipper (blind)
35) Wellington boots (Wellies) / rubber boots

Page 7
36) plaster / band-aid (bandage)
37) plait / braid
38) fringe / bangs
39) Teddy bear (blind)

40) (tele)phone box / phone booth

Table 3.2: Picture Cards

31, *handbag/purse* and item 14, *cooker/stove*, do provide useful phonological data. The the pronunciation of (r) in *cooker* and *purse* can indicate the phonological status of (r). The choice of British or American lexical variant is not used in any analyses. However, the pronunciation of the numbers that accompany the pictures is used in the analysis of interdialect phonology, as well as the pronunciation of certain tokens.

3.1.5 Reading Passage

The last of the elicitation tasks was a reading passage. The passage was fabricated specifically for this study and includes instances of all of the phonological features that are outlined in the following chapters. Like the phrase list and the naming of lexical differences, this is a highly

monitored situation. Unlike the other two tasks, the various phonological and pronunciation variants can be tested in a more natural context. This provides a less rigid style from the phrase list but a style more focused on pronunciation than in the picture cards.

> One day Dave was at home. The weather was miserable. Outside, it had been raining for what seemed like an eternity. Dave really wanted to go out, but he couldn't think of what to do. He sighed, "I don't know whether I should stay inside and read a book, or if I should phone up some friends". He decided to stay in and take a long, hot bath. While he was soaking, a great thought occurred to him. "Let's see what's playing at the cinema!" Dave dried himself off, picked up the newspaper, and sat down in his easy-chair in order to leaf through the pages. He found the movie section and the only movie he thought that was worth seeing was called "The Loch Ness Monster Swallows the Earth". The idea of seeing Nessie swallowing the planet struck Dave as quite amusing. Dave then phoned up his friend, John, and told him about the movie. John was excited by the idea of seeing the movie, too. John had read the book, but hoped the movie version would be better. Dave put on his coat and boots, and walked over to John's house. John was lucky. He had a car. So together, they drove to the cinema instead of walking. At the theatre, they bought their tickets and got some popcorn with lots of butter on it. Dave bought a bottle of mineral water, but John preferred a nice, sweet, sugary soft drink. The movie was full of action. Dave and John both loved it. On their way back home, they couldn't stop talking about it. Dave really liked it when the Loch Ness Monster burned down the blockade the army had set up. In the middle of the path just outside John's door, there was a pool of water that had formed from all the rain. They were about to pass it when Nessie herself sprang out of the pool and swallowed them up.

3.1.6 Summary of elicitation devices

The different types of elicited data test dialect acquisition in a formal register. Interdialectal patterns found in this register are assumed to be found throughout the individual's idiolect. Acquisition in the formal register is easier to quantify and thus easier to analyse.

Even within this formal register, there is a certain amount of stylistic variation. The reading passage demonstrates phonological phenomena in connected speech and in a somewhat natural style. At the opposite extreme, the phrase list is highly monitored by the participant with little variance due to individual style. If a phonological acquisition is demonstrated in the phrase list, it should also be evident in the reading passage as well as in conversation and other less formal registers.

The target accent of the second dialect is indirectly controlled for. All of the participants examined are within the 'sensitive period' or 'critical age' for phonology, meaning that there are some changes which take place in their phonological systems[92].

The main purpose of the data collection is not to determine whether or not a second dialect has been acquired. Rather, like the old-fashioned phonological analyses of 'exotic', undocumented languages, the data collected here are used to give a phonological description

[92] See section 2.3.1 for a discussion on the critical period.

of the mid-Atlantic dialect and what changes take place in an individual's phonology as one acquires a second dialect.

3.2 Subject Pool

3.2.1 Experimental Participants

The purpose of this study is to examine the change in phonology as a speaker moves from one dialect region to another. According to the Critical Period Hypothesis, acquiring a second variety fluently is progressively more difficult the older one gets, especially for phonology (Long 1990; see also section 2.3.1). A change in a phonological system should only be observable in children, according to a strict interpretation of the critical period hypothesis. However, Bialystok (1997) points out that several adults successfully acquire a second language, including the phonology, completely and fluently. Indeed, in this study, several older speakers have been noted as acquiring a second dialect, at least partially. These adults are considered in the data analysis and discussion. The CPH in this study is considered more a rule of thumb rather than a strict, 'critical' point after which change is impossible. In this study, phonological change is more readily observable in children. For that reason, the change in a child's phonology is the focus of this study.

The children used in this study most obviously have acquired a first language, including literacy. The minimal age at the time of recording should be five to seven years. Ideally, five years old would be the minimum age of arrival, but this not a necessary requirement, just a preference[93]. It is preferred that the child has lived in the same native dialect environment for at least five years, but preferably six or more. It was also preferred that the dialect and accent of the D1 community is the same as one or both parents, and that there has been some schooling in the D1 community prior to the trans-Atlantic move.

The maximum age of exposure to the second dialect was set at eighteen years. As has just been stated, even some adults older than eighteen have acquired some of a second dialect, but a maximum of eighteen years was set for two main reasons. First, it impressionistically seemed that after that age, the ability to change one's phonology dramatically decreases. This observation was made before thorough consultation with literature on critical age (e.g. section 2.3.1) Phonological changes have been recorded in this study for several older teenagers,

[93]This difference between preference and requirement can be seen in tables 3.3 and 3.4.

despite being past what is considered the critical age for phonology (six to thirteen years)[94]. A second reason for setting such a high maximum age limit is due to social interaction. School provides for much more in-depth social interaction with speakers of the local dialect than adult life, even for older teenagers. Hence, another requirement for the subjects is that they must be enrolled in a local school. A local school is specified because at certain private institutions, like the American and international schools in London and Aberdeen, there is minimal contact with speakers of the local dialect.

A preference, rather than a requirement, is that there is an indefinite length of residence. Alternatively, the intended length of residence could be at least three years. It has been noted in the initial stages of data collection that temporary residences, lasting one year or so, do not allow for much change in one's idiolect. Longer residences allow for more interaction with the local community and expose the dialect learners to more of the target dialect. Additionally, Chambers makes a distinction between short-term accommodation, which is transitory, and long-term accommodation, which may be "nonephemeral acquisitions" (Chambers 1992, 675). The long-term overseas residence helps ensure "nonephemeral acquisition" – that is, permanent interdialectal change and dialect acquisition[95].

To summarise, the main requirements of subjects are a minimum age of of five years upon recording, a maximum age of arrival of eighteen years, literacy, enrolment in local schools and long or indefinite stay. If one member of a family meets these requirements, the entire family is recorded. While other families may not necessarily meet all of the requirements, they may still demonstrate a change in idiolectal phonology and thus may merit inclusion in the data analysis.

There are many factors that are not considered directly with these requirements, most notably socio-economic class and educational background. The parents of these families decided to move abroad because of work. This 'simple' fact controls for several social factors. One or both parents work in a white-collar, office-based job with at least an above average salary. One or both parents are university-educated. All of this implies that one or both parents speak a standard or mainstream accent rather than with a local accent. These families have decided to live in safe, generally suburban, 'middle-class' neighbourhoods. This, in turn, reflects on the accent spoken in the local schools. So while the target accent is not explicitly controlled for, a standard or mainstream accent – that is, the broader definitions of GA and

[94] As discussed in section 2.3.1.

[95] While long term overseas residences help ensure useful data, there is no guarantee that there is interdialectal development.

SBrE outlined in section 1.3 above – are more than likely the target D2, as well as the potential D1, because of a combination of socio-economic factors.

The participants of this study are listed in tables 3.3 and 3.4. One participant, AF, was born in England to American parents. During the recording session, he accommodated towards the interviewer, trying to speak with a GA dialect. However, he spoke with a mid-Atlantic dialect. He is used in this study to show the structure of the interdialectal phonology in bi-dialectal speakers, despite the communicative convergence towards the interviewer.

Participant	Age of Arrival	Length of Residence	Sex
AF	0	9.15	M
NF	1	9.15	M
JEC	2.973	5.15	F
JNP	3.058	4.15	M
HS	4.493	2.14	F
ROP	4.71 5	4.15	M
MN	5.321	3.15	F
JAC	6.014	5.15	F
EB	6.452	2.15	F
LP	6.573	4.15	M
KN	6.83	3.15	F
ES	8.255	2.14	M
BB	8.318	2.15	M
EMB	18.21	4.68	F
CC	31.89 (adult)	5.15	F

Table 3.3: United States participants in England

Participant	Age of Arrival	Length of Residence	Sex
AL	3.77	1.86	M
DP	4.44	5.35	M
CM	5.04	6.46	M
JMP	6.65	5.35	M
TL	6.67	1.86	M
AAM	7.15	6.46	F
JH	7.33	3.71	M
NM	8.35	6.46	M
TH	10.93	3.71	M
AS	14.27	1.2	F
CS	17.52	1.2	F
AWM	36.54 (adult)	6.46	M

Table 3.4: English participants in North America

Tables 3.3 and 3.4 reveal that two adults are examined in this study. They quite clearly exceed the age of arrival of eighteen years set as a requirement above. Features of a 'mid-Atlantic dialect' were noted in these two adults during the recording sessions. The primary aim of this thesis is to explore the interdialect phonology of mid-Atlantic speakers.

Because of the sensitive period, interdialectal variation is expected to be most diverse amongst younger speakers. The requirement and preferences were set in order to gather the most diverse and useful data. That does not mean that somebody who falls outwith these requirements does not demonstrate interdialectal changes and therefore must be excluded. Although these adults do not meet the requirements, their interdialects provide useful data and are thus included in this study. Very brief comparisons are made between these adult speakers and the younger speakers to see if adults and children have different methods of interdialectal development.

3.2.2 Control Participants

The data elicited from the experimental subjects is compared to documented sources of particular phonological phenomena (e.g. Giegerich 1992; Wells 1982; Kenyon 1994; Cruttenden 2001). The literature does not always keep pace with changes in progress. However, the literature often provides depth, the like of which cannot be obtained from the field devices outlined above. For example, Harris (1994, 194-225) provides over thirty pages of tokens, data and analyses on /t/ lenition (i.e. tapping and glottalisation, discussed in chapter 4). Likewise, Giegerich (1999, 167-280) offers over 100 pages on the non-rhoticity of SBrE. Although the literature is subject to academic debate and revision, it can provide a fairly accurate description of the native and target phonological variable in question when there is not enough data from the field. Any linguistic factors that could be affecting the interdialect that are not documented are discussed in the appropriate sections. Such literature suffices as the primary reference as to the 'ideal' target, although some recorded data is also used.

For this thesis, the best way to compare the experimental data with the target is to record local speakers of the target variety. Indeed, Chambers matched the sex and age of his experimental participants to speakers of the target dialect. Unfortunately, constraints on the logistics of finding matched controls willing to participate[96], as well as constraints on the time needed to travel and record all participants – particularly during a specific period dictated by international travel arrangements[97] and constraints on the finances required for accommodation and transportation all prevented such control data from being recorded.

Many people who were recorded for this study demonstrated no change at all towards acquiring the second dialect, as compared to the literature. Additionally, many children, some of whom were enrolled in international schools rather than local schools, demonstrated

[96] Although most families quite willingly participated, some were initially wary of unsolicited letters sent by a stranger.

[97] Additionally, there were a series of strikes within the airline industry at the time.

no change. The ideal scientific control would have subjects that are not exposed to the experimental conditions. Those that showed no change were, however, exposed to the same experimental conditions as those that had some idiolectal change and interdialect development. Despite that, those that show no change make adequate controls: not only do they show what the native dialect is for one group, they show what the target is for the other. Combined with the documented attestations of the phonology, these control participants provide sufficient data with which to compare the experimental participants. Such control data would be seriously flawed if, for example, children enrolled in local schools were compared to those in international schools. However, such comparisons are not made in this thesis.

3.2.3 Obtaining Participants

The requirements listed in 3.2.1 above – that is, children that are literate, enrolled in local schools and between the ages of five and eighteen – were sent to many sources. There were sent to two electronic sources. The first is Linguist List[98], and the second was the American Dialect Society List[99].

The requirements were addressed to human resources managers and personnel managers at several multi-national corporations. However, there was little success along these lines of enquiry.

Letters listing the requirements were also sent to embassies and consulates. Some people from the diplomatic circles participated in this study. Others provided lists of expatriate organisations such as the American Women's Clubs or St. Andrews's societies, to whom the appeal for participants was also sent.

Lastly, the requirements were sent to 'a friend of a friend'.

All of these correspondences yielded twenty-seven families whose recordings were used for this study. Of these families, there were twenty-seven participants who demonstrated some degree of idiolectal change. The remaining participants that were recorded acted as controls.

3.3 Data Analysis

The following chapters present the collected data. Four phonological features are examined: the tapping of medial /t/; the front or back realisation of the BATH vowel; the merger or

[98] Volume 9.534, 6 April 1998
[99] August 1997 and 12 March 1998

distinction of the vowel represented by the THOUGHT and LOT lexical sets; rhoticity or lack thereof, including intrusive-r.

3.3.1 Present-day Analysis

The chapters begin with a present-day account of the phonological phenomena in both dialects. One of the tenets of a contrastive analysis is that with a full and detailed description of the native and target varieties, the differences between the two varieties can be mapped. The original Contrastive Analysis Hypothesis predicts that any errors or difficulties in the production of the target variety are a result of the difference(s) between the two varieties (e.g. Lado 1957; Fries 1945).

Instead of a full phonological account of both SBrE and GA, the present-day analyses give descriptions of individual phonological phenomena. Sometimes it is enough to point out that one dialect has a given feature while the second does not. It is more often the case, however, that the phonological phenomenon is treated differently in the second dialect than the first, rather than altogether absent. The present-day analyses highlight how the two dialects differ with respect to one phonological variable. By knowing the differences, the target is also known and predictions can be made as to how the native phonology must be manipulated in order to match the target.

3.3.2 Historical Analysis

Following the present-day descriptions is a short history of the phonological feature. There are several reasons for including a diachronic account.

The history of a phenomenon shows how the difference developed between the dialects, since it is assumed that SBrE and GA had a common ancestor. This historical progress is one possible map as to how the difference can be acquired, but not the only possible path towards acquisition. In acquiring the difference, the ultimate target of the dialect learner is either a repetition of what happened historically or else the target amounts to the reversal of a historical change. In either case, though, the target might not necessarily be reached. The acquisition process may be similar to the diachronic process, except perhaps on a smaller time scale. Historical change is the gradual manipulation of the existing language system – in this case, phonology – into a different language system. In this instance, second dialect acquisition is much more similar to diachronic development than to second language acquisition. Diachrony

and interdialectal development are both examples of language change or change to a single language competence.

The acquisition of a second language, or rather the development of an interlanguage, is also a type of language change. Interlanguage development involves large numbers of changes at all levels of the language – e.g. phonology, syntax, semantics, etc. The two varieties may not necessarily be historically related or have anything in common. Interdialectal development generally only involves a few changes – akin to gradual historical development – and, with respect to English, these changes are mostly at the phonological level.

With respect to one phonological variable, the historical process that brought about dialectal divergence is one way in which an interdialect can develop. However, this does not equate interdialectal development with diachrony. Interdialectal change may follow a completely different path from historical change, even though the starting point and the target may be the same. The historical descriptions are given only to show one way in which a single variable has changed.

These histories are by no means complete; nor are they meant to be authoritative. This thesis is not based on historical linguistics principles. The histories are deliberately brief and are only complete enough to put the interdialectal data into historical perspective – i.e., how changes in historical terms can reflect interdialectal changes. A historical analysis starting with the Old English period is perhaps more thorough, but such a complete history is unlikely to be relevant to the task at hand, which is to put interdialectal change into a certain perspective. Some of the historical analyses presented here differ from what more qualified historical linguists have written because of the perspective of the interdialectal analysis.

As with the whole of this thesis, the interdialectal data is the driving force. Differences in both the present-day and historical accounts of a given phonological phenomenon are presented in light of the discoveries made from the interdialectal data. A speaker immersed in an environment where everybody speaks a different dialect provides an especial perspective that can often be overlooked in a mono-dialectal perspective of a present-day or historical account.

It is clear that there are several stipulations to consider when reviewing the historical analyses presented in the following chapters. Sometimes the historical analysis presented here must be taken with a grain of salt: that grain being the interdialectal analysis. The reader is asked to bear this in mind when reading through the sections on the history of the phonological variables.

3.3.3 Interdialectal Analysis

Following the historical and present-day accounts is the interdialectal analysis.

The interdialect is the idiolectal competence that functions as a speaker's second dialect, as described in sections 2.1.1 and 2.1.4. As such, all tokens collected and analysed in this thesis are technically interdialectal responses.

However, in the analyses, responses that are unchanged from the speaker's original dialect might sometimes be referred to as 'D1' tokens; responses that are completely like the second dialect might sometimes be referred to as 'D2' tokens. Indeed, the data is presented as such in the tables listing the totals of the participants' responses. By the same token, responses that are neither native-like nor target-like could be referred to as 'interdialectal' since the interdialect can sometimes seem that it is neither the native dialect nor the target dialect, but rather in between the two. Such tokens are labelled as 'ID' for 'interdialectal' in the results tables. However, to avoid ambiguity with 'interdialectal' referring to the second dialect competence in the body of the text, most tokens that were neither native-like nor target-like are referred to as 'intermediate' responses.

The interdialectal analysis shows the stages of acquisition. The analysis maps the progress from mono-dialectal D1 usage of a phenomenon through to native-like D2 usage, showing the continuity of the acquisition process. The native-like D2 stage may never be reached, but the analysis still shows some of the progressive stages that are reached in the acquisition of the phonological feature.

Examination of the data focuses on the individual. The reason for highlighting an individual's interdialectal competence is simply because two (or more) people are seldom at the same stage of dialect acquisition. The individual cases show how idiolectal phonology changes in dialect acquisition. The individual-based approach lends itself, on occasion, to a small case study, either of the individual or of a family.

Some of the interdialectal analyses are based on personal, impressionistic transcription. An acoustic analysis of each and every datum is not feasible. However, acoustic analysis was carried out on responses that could not immediately be classified impressionistically as clearly belonging to the native dialect or the target dialect as well as all over the relevant tokens for the aforementioned case studies. A big disadvantage to not using acoustic analysis for every token is that there is not averaged material to which the intermediate tokens can be compared (Shockey, p.c.). This would be an unfortunate disadvantage if, say, one native speaker of GA acquiring SBrE was compared to all other speakers within the same large group. Indeed, such

comparisons are made, but only to ascertain the group's average degree of change towards the target dialect within the interdialect[100]. The main stated aim of this thesis is the phonological structure of the interdialect. An interdialect is most easily examined using an individual. For the individual and small-group case studies, however, these limited acoustical analyses serve very well to highlight the current structure and development of the interdialect with respect to an individual. This will become clear within the analyses in the following chapters.

The interdialectal analysis is presented in two sections: one section is devoted to American families living in England; the second section is devoted to English families living in North America. Following the discussion of how the D2 phonology is acquired, the two groups – the Americans and the English – are compared to each other.

3.3.4 Comparison

One of Chambers's hypotheses is that loss of a feature is faster than acquisition of a new feature (14). According to Chambers, the Canadian youngsters had to lose medial tapping of /t/ as well as lose the merger of the vowels represented by *cot* and *caught*[101]. At the same time, the Canadians have to acquire the BATH vowel, non-rhoticity and intrusive-r (Chambers 1992, 695-696). One also could easily argue that the Canadians would have to acquire the distinction of the vowels represented by *cot* and *caught*, creating new categories. The same argument would state that the Canadians would have to lose post-vocalic (r).

Continuing with Chambers's terminology for the time being and referring to only one phonological variable, this means English participants have to acquire tapping. Native GA speakers, on the other hand, must associate a realisation ([t]) to an underlyer (/t/) in an environment where that association did not previously exist in the native dialect (between vowels). In a strict SPE-like framework, there would be no transformation between the features describing the underlying /t/ and the surface voiceless, alveolar stop [t]. This lack of transformation means, like Chambers says, that the tapping rule is lost or suppressed. Despite this loss, there are still changes occurring to the interdialect. Throughout this thesis, any change of the interdialect – even supression – is considered some form of acquisition. Departing from generative terminology, native GA speakers acquiring SBrE will be acquiring a voiceless [t] rather than supressing tapping even though the end result may be the same.

[100] The details of the statistical analyses are presented in section 3.3.5.

[101] Chambers states that "polylectally, the (Canadian English) merger is innovative. It is the absence of merged forms in the Canadians' speech that signals their accommodation" to (Southern British English), and on this basis, it is considered a feature being eliminated (1992, 696).

The tapping of /t/ is a sociolinguistic variable; it is a single convenient label to describe two different phonological processes with respect to second dialect acquisition. Native SBrE speakers acquiring GA are targeting the tapping rule. Native GA speakers acquiring SBrE are targeting the loss of tapping. These two different perspectives can reasonably be classified as the same sociolinguistic variable: the tapping of medial /t/[102]. The two groups of speakers can be said to be acquiring or targeting different aspects of the same variable.

One group of speakers acquiring one aspect is compared to the other group acquiring the other aspect. In this case, the group acquiring tapping is compared to the group losing tapping. It then can be determined which of the two aspects that make up the single sociolinguistic variable – the SBrE version or the GA version – has a greater degree of change in interdialectal development. This comparison is made 'qualitatively', showing which stages the speakers had to pass through, any overt strategies that were used, how the phonological structures were manipulated or restructured, etc. This comparison is also made 'quantitatively' with statistical analyses.

As was mentioned above, each of the comparisons is one aspect of the same phenomenon: Rhoticity is different from non-rhoticity, but both are concerned with syllable-rhyme (r); the [æ] vowel is different from the [ɑ:] vowel, but both are concerned with the BATH vowel. Additionally, for any given variable, the same elicitation tokens were used for both groups. So, for the BATH vowel, each participant read out the phrase *metal and plaster* regardless if that participant were targeting an [æ] realisation or an [ɑ:] realisation. The statistics are used to compare how successful each individual and each group were in the acquisition of the sociolinguistic phonological variable, not the particular aspect of the variable. The details of the statistical analyses are explained in the next section.

3.3.5 Statistical Analysis

Part of comparing the two groups involves statistical analyses. Each token was classified as 'D1', 'D2' or 'interdialectal' based on impressionistic and acoustical analyses. One of the claims of this thesis is that realisational phenomena are more successfully acquired than phenomena affecting underlying forms. Inherent in this claim is that realisational variables are more likely to undergo interdialectal change. Change does not equate to acquisition, but change does indicate interdialectal development. For that reason, those tokens that were either

[102] In Labovian terminology, this single sociolinguistic variable would be described using rounded bracket notation, e.g. (t) for tapping. This notation method is used in this thesis regarding the (r) of rhoticity and non-rhoticity as well as tapping of (t).

interdialectal responses or D2 responses were counted together in the statistical analyses as tokens representing idiolectal change. The number of tokens that changed was compared to the number of tokens that remained D1-like and simple percentages were made. These percentages are mentioned in the interdialectal analyses. The percentages were also the numbers used in the various statistical tests that were run.

For each phonological variable that is examined, there are different numbers of potential realisations. For example, there are forty-six potential realisations of /t/ but only fifteen of the BATH vowel. Additionally, there is no measurable, fixed numeric distance between a D1 response and an interdialectal response or between an interdialectal response and a D2 response. These facts dictate that non-parametric tests be run for any statistical analyses. The details of which non-parametric tests were run is presented later, as appropriate.

The following chapters present the phonological variables in detail. Included in the following chapters are the qualitative and quantitative analyses charting the second dialect acquisition process.

Chapter 4

Medial /t/ Tapping

4.1 Introduction

A tap or a flap is a sound "produced by a single rapid contact with the roof of the mouth by the tongue, resembling a very brief articulation of a stop" (Crystal 1991, 346). The ballistic natures of a tap is "caused by a single contraction of the muscles so that one articulator is thrown against another" (Ladefoged 1993, 168). The articulation of the stop in GA is too brief to cause a disruption of vocal cord activity. The terms 'tap' and 'flap' are often used interchangeably. In this thesis, only the term 'tap' will be used, since "flaps are retroflex articulations" and the American English tap is not retroflex (Ladefoged 1993, 168).

In GA, /t/ becomes a tap in intervocalic position (Chambers 1992, 682; Wells 1982, 248-252; Fox and Terbeek 1977; Kahn 1980). SBrE is assumed to have a voiceless alveolar plosive realisation of /t/ intervocalically. Actually, the environment in which /t/ becomes a tap and the status of medial /t/ in SBrE are both rather more complicated. The details of these complications will be outlined in the following sections. For the present introduction, however, these explanations of /t/ are sufficient.

For a native GA speaker to acquire the SBrE pattern, a voiceless alveolar stop has to become the new output of the rule governing intervocalic /t/. Since the new output [t] would match the input /t/, the end result is effectively the suppression of tapping. It was argued in sections 2.2.1and 2.7.3.5 that in this thesis *every* interdialectal change is a form of acquisition. Any 'elimination' or loss or disabling comes as a direct result of the acquisition of – or the attempt to acquire – a dialectal difference. Throughout this chapter and in the following chapters, the loss of tapping by native GA speakers will be referred to as acquiring a voiceless [t], even

though in effect, this is the same as the suppression of tapping. This is a departure from the generative phonological framework outlined in SPE. The data to be presented will show that the output is not always a voiceless alveolar [t] and that there is some sort of rule still governing medial /t/ in many interdialects.

Only the output or surface representation of the tapping rule is targeted by native speakers of GA acquiring SBrE. The input of the rule remains the same. In the early stages of interdialectal development, the context in which /t/ changes also remains the same[103]. This is similar to the acquisition of dark [ɬ] by David's participants (see 2.7.1 above): the surface representation of /l/ changed while the underlying representation and the environment in which that underlyer was transformed remained the same. The difference of /t/ between GA and SBrE from a GA perspective is an realisational difference, as defined in section 2.6.1, where the input and the context remain unchanged[104].

For a native speaker of SBrE to acquire the GA pattern, a new rule must be incorporated into the phonology. This new rule realises /t/ as a tap in intervocalic position. It is predicted that both the tap [ɾ] and the voiceless plosive [t] will show up in the interdialectal data for this group. Since the tap is not assumed to be native to SBrE, intermediate forms such as a voiced alveolar stop [d] or a partially voiced tap are also expected. The difference of /t/ between SBrE and GA from an SBrE perspective is a contextual or rule-based difference, not a realisational difference[105]. A new rule must be acquired but the underlying system of categories remains unchanged.

Despite one group targeting a new rule and another targeting merely a new output for an existing rule, it is predicted that there will be a high success rate in the acquisition of /t/ for both groups. GA speakers have to replace one output realisation [ɾ] with another [t] within an existing D1 phonological rule[106]. As was mentioned above, this effectively reverses the rule that realises the tap. Native GA speakers are predicted to have a higher success rate than the native SBrE speakers who, instead, either have to acquire a whole new phonological rule or re-structure an existing D1 rule beyond the simple re-assignment of one surface representation.

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[103] Ultimately, the context in which /t/ changes might become superfluous since output would match input, assuming complete and permanent acquisition of [t]. But in the early stages of acquisition, it is assumed that some remnant of the tapping rule exists in order for the acquirers to know which output of /t/ to target.

[104] Again, at least in the earlier stages of acquisition of (t).

[105] In section 2.6, these two types of differences are discussed: realisational differences in section 2.6.1; and contextual differences in section 2.6.2.

[106] Assuming there is no conflict with the output of /d/, see section 4.2.1.1

It was mentioned earlier that the status of /t/ in both dialects is more complex than the presence or absence of a tap in intervocalic position. These complexities of medial /t/ in GA and how medial /t/ is acquired by both groups of speakers is presently discussed.

4.2 Present-day Analysis

4.2.1 General American

4.2.1.1 The Nature of Tapped Consonants

In General American English, all alveolar stops – that is /t/, /d/ and /n/ – are subject to tapping. The oral stops /t/ and /d/ both have an alveolar tap [ɾ] realisation in certain environments as in *heater* ['hiɾɚ] and *header* ['hɛɾɚ]. The nasal stop /n/ becomes a nasalised tap [ɾ̃], as in *many* [mɛɾ̃i], but maintains the feature of nasality (Wolfram and Johnson 1982, 19-20; Ladefoged 1993, 92). This natural class, then, can be expressed as[107]:

(16)
$$\begin{bmatrix} - & \text{syllabic} \\ + & \text{consonantal} \\ + & \text{coronal} \\ - & \text{continuant} \end{bmatrix}$$

All three of these segments included in (16) become taps[108] . The feature [voice] cannot be used to adequately describe taps: /d/ and /n/ are both already voiced[109]. Additionally, the underlying [+ voice] of /d/ and /n/ precludes the assimilation of voicing as a motivation to become a tap[110]. The feature [sonorant] might be appropriate. Taps are often voiced in GA, for example. However, /n/ is also a sonorant. Since /n/ is already a sonorant, there is no motivation for assimilating the sonorance of its neighbouring segments.

A tap is more than just a sonorant or a voiced segment. Taps have short enough of a duration not to cause any stricture in oro-nasal airflow. In order to describe the rapid, almost continuous nature of a tap, the feature [ballistic] will be used. All tapped consonants, /t, d, n/[111], are

[107] Wolfram suggests that the alveolar /l/ also becomes a tapped [ɺ], as in *belly* [bɛɺi], but still maintains a lateral articulation (Wolfram and Johnson 1982, 19-20). This suggestion has not been made elsewhere, nor has it been denied. This thesis will only examine the tapping of medial alveolar stops and reserve the inclusion of /l/ as a tapped consonant for future research.

[108] For the remainder of the discussion, if the input is (16), it will simply be listed as /t/. The other two alveolar stops /d, n/ will be implied. Any exceptions to this convention will be noted.

[109] This is one reason why this phonological variable is not referred to as t-voicing, which is how Chambers (1992) refers to it.

[110] The basic environment for tapping is between vowels, as mentioned in 4.1, above. Vowels are sonorants and voiced.

[111] The underlying representations /r/ can be tapped in some varieties of English, such as Scottish Standard English (Giegerich 1992, 24), South African English (Wells 1982, 616-617), Liverpudlian English (Wells 1982, 43, 75),

[+ ballistic] in the appropriate phonological environment. All other consonants in English are always [– ballistic] or simply unspecified for the feature [ballistic].

4.2.1.2 Segments Following Tapping

Several consonants undergo the tapping process. However, the discussion will presently focus on the tapping of medial /t/, since it is a very noticeable feature of GA, or "ubiquitous" using Chambers's word (1992, 682). The tapping of only /t/ also happens to be the variable under examination.

Medial /t/ becomes a tap before an unstressed vowel, e.g. *tomato* [tə'meɪɾoʊ] or *pity* ['pɪɾi] (Ladefoged 1993, 92-93; Giegerich 1992, 226; Wells 1982, 248-252; Bauer, Dienhart, Hartvigson, and Jakobsen 1980, 38). The unstressed vowel does not necessarily need to belong to the same word; it can belong to the following word, as in *hit it* ['hɪɾ # ɪt̚], *not at all* [nɑɾ # ər # ɑɬ]. In additional to vowels, if the word following a potentially tapped /t/ begins with an /h/, then tapping is not impeded, e.g.: *hit him* [hɪɾʰəm], *taught himself* [tʰɔːɾʰɪmsɛɬf][112]. As with the vowels that can follow a tapped segment, the following /h/ must belong to an unstressed syllable, and – as the two examples demonstrate – usually at the beginning of a function word.

Tapping additionally occurs if the following syllable is realised as a syllabic liquid, e.g. *battle* [bæɾl̩], *batter* [bæɾɹ̩] (Giegerich 1992, 226; Bauer, Dienhart, Hartvigson, and Jakobsen 1980, 38). A tap does not occur if the following unstressed syllable is realised as a syllabic alveolar nasal [n̩] – e.g. *button* ['bʌʔn̩], not *['bʌɾn̩][113]. It is sensible to incorporate syllabic liquids with vowels and state that a tap occurs before a non-nasal syllabic.

$$(17) \quad \begin{bmatrix} - & \text{syllabic} \\ + & \text{consonantal} \\ + & \text{coronal} \\ - & \text{continuant} \end{bmatrix} \rightarrow [+\text{ ballistic}] \,/\, \_\_\_\_ \begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \\ - & \text{stress} \end{bmatrix}$$

Returning to liquids, Picard (1997, 290, fn.9) insists that there must be an intervening vowel [ə] between a tap and a 'syllabic' consonant. If not, tapping simply cannot apply. Looking at tautosyllabic /r/, there is very little acoustic basis to classify syllabic-r [ɚ ~ ɻ̩] as two sounds.

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conservative RP (Wells 1982, 282). In these varieties, /r/ can be considered a tapped consonant. However, /r/ is not tapped in GA, so /t, d, n/ are considered the only tapped consonants.

[112]The /h/ in this environment is effectively a voiceless vowel (Abercrombie 1967, 59; Also Shockey, p.c.).

[113]A tap can sometimes occur before a syllabic /n/ if the vowel preceding /t/ is unstressed, e.g. *competent* ['kɑmpɪɾn̩t] (Jones 1997, 102), but not *militant* ['mɪlɪtənt] (Jones 1997, 329). The presence of a tap after an unstressed vowel, before a syllabic /n/ seems to be lexically or idiosyncratically determined, rather than phonologically predictable. Additionally, the pronunciation of ['bʌɾn̩] for *button* was recently heard by a younger native GA speaker. Perhaps this is a change in progress.

Finding where the vowel [ə] ends and /r/ begins is a challenging task[114]. It will be argued in chapter 7 that syllable-rhyme /r/ in GA is, in fact, a vowel. The argument presented below is that /r/ is consonantal in syllable onsets and non-consonantal in syllable rhymes (Giegerich 1999, chs.7-8; Kahn 1980, ch.2, app.1; Olive, Greenwood, and Coleman 1993, section 7.3). Being a vowel, there would be no need to insist on another vowel before 'syllabic-r'[115].

Concentrating specifically on /l/ Ladefoged (1993, 55) points out that lateral plosion between a tap and /l/ is uncommon in GA. If there is no lateral plosion, then there must be a brief vowel articulated between the tap and /l/ since both consonants share a place of articulation. But if a GA speaker releases that tap immediately into a lateral rather than a brief vowel[116], then there is still alveolar contact and thus a degree of consonantality.

One solution is to state that /l/ become [– consonantal] in syllable rhymes, much like /r/[117]. The alveolar /l/ is classified as an approximant because of the relatively free airflow around the sides of the tongue. In English, /l/ is clear, alveolar [l] in syllable onsets – that is, there is contact between the blade of the tongue and the alveolar ridge. In syllable rhymes, /l/ is dark or velarised [ɫ] (Olive, Greenwood, and Coleman 1993, 204-205; Giegerich 1992, 211ff.; David 1985)[118]. The heavy velarisation of /l/ in syllable rhymes may inhibit contact between the tongue and the palate. For some speakers of GA, a dark [ɫ] in syllable rhymes can be a vocoid. A vocoid is a vowel or a vowel-like articulation (Wells 1982, 313). There is no contact or a very open degree of stricture between the tongue and the palate in the articulation of a [– consonantal] [ɫ]. Indeed, Kahn argues that in a lateral and tap cluster, the /l/ is not consonantal (Kahn 1980, 94-95, 163)[119]. This would allow the environment listed in (17) to simply be [– consonantal].

$$(18) \qquad /t/ \rightarrow \left[\; + \quad \text{ballistic} \; \right] / \_\_\_ \left[\begin{array}{ll} - & \text{consonantal} \\ - & \text{stress} \end{array} \right]$$

Such a solution would also allow for tapping before /l/ without lateral plosion. Although a [– consonantal] /l/ is permissible after a tap, lateral plosion implies that alveolar contact is

[114]Analysing waveforms and spectrograms for /r/ for this thesis as well as in the speech technology industry, the author has yet to successfully find a clear border delineating the end of [ə] and the beginning of /r/ in the same syllable.

[115]From this point on, syllable rhyme /r/ will be transcribed as [ɚ] to emphasise the vowel like nature of this segment, so *batter* is transcribed as [bærɚ].

[116]E.g the author.

[117](Olive, Greenwood, and Coleman 1993) make the same analysis of /r/ as well as of /l/ regarding the relationship between consonantality and syllable position.

[118]Although syllable-onset /l/ in GA may be velarised (Shockey, p.c.), the point is that syllable-rhyme /l/ is even *more* velarised, thus meriting a light ~ dark distinction depending on syllable position Olive, Greenwood, and Coleman 1993, 204-205.

[119]Cf. Cockney *fill* [fɪo] (Wells 1982, 313).

maintained and such contact would be consonantal. Although there are some faults with this solution, it will be more important later in the discussion.

Another solution to tapping before lateral plosion is to simply maintain rule (17) as it is. This implies that consonantal sonorants become [+ syllabic] at an earlier stage than tapping in phonological derivation. This is an undesirable solution because this would potentially permit tapping before syllabic [n̩], which is rare (cf. footnote 113). Unfortunately, no solution for tapping before a syllabic [l̩] implied by lateral plosion can be offered at this point. For those GA speakers that actually have a vowel between a tap and syllable rhyme [l] – as opposed to those who produce lateral plosion or have a vocoid realisation of /l/ in rhymes – rule (18) adequately describes the environment that follows a tapped consonant.

4.2.1.3 Stress and the Syllable Structure of Tapping

In the previous section, tapping was listed as occurring before an unstressed syllable. A medial tapped /t/ can also occur before a stressed vowel, but the tap's environment is more restricted. An underlying alveolar stop that is in word-final position can be tapped. It is possible for a tap to be realised in *sought Ed* [sɔɾˈɛd], *great eye* [greɪɾˈaɪ] or *at all* [æɾˈɑːɬ] because the /t/ is part of the words *sought*, *great* and *at* and are in word-final and thus syllable-rhyme position lexically. However, it is not possible for a tap to be realised in the phrase *saw Ted* [sɔˈtʰɛd], *grey tie* [greɪˈtʰaɪ] or *a tall man* [əˈtʰɑːɬmæn] because, prior to any syllabification, the underlying /t/ is in a syllable onset before a lexically stressed vowel (McCarthy and Prince 1993, 130-131; Bauer, Dienhart, Hartvigson, and Jakobsen 1980, 38; Umeda and Coker 1974, 1). In other words, /t/ cannot be tapped in foot-initial position but can be tapped in foot-final position, where a foot is defined as "a stretch of phonetic material that begins at the onset of a stressed syllable and ends at the onset of the next stressed syllable" (Giegerich 1992, 181). Taps cannot occur from a morpheme-initial /t/, regardless of the stress assignment of the second syllable – e.g. *buy tomatoes* *[baɪ # ɾəˈmeɪɾoʊz] (Kahn 1980, 95), *pretend* *[prə + ˈɾɛnd], *pretentious* *[ˈpriː + ɾɛntʃəs] (Harris 1994, 199)[120]. Tapping across word and morpheme boundaries is a clear indication of post-lexical application. However, if there is no word boundary – or perhaps morpheme boundary – then the second syllable must be unstressed.

[120]There are some exceptions to this generalisation. The /t/ in the onset of the functional lexeme {to} to can be tapped in some circumstances – e.g. *I'll see to it* [aɪl si tə ɪt̚], with stress either on *I'll* or *see*. Additionally, the /t/ onset of *tonight* and *tomorrow* can be tapped – e.g. *I'll call you tonight* [aɪɬ si jə tənaɪt̚.]. The examples of {to} in *to*, *tonight* and *tomorrow* are historically related, although the diachrony may or may not have any bearing on the synchronic morphemic analysis of these words. Since there are so few instances on word-initial /t/ being tapped, it is assumed that these exceptions are marked in the lexicon as permitting the tapping process.

(19) a. /t/ → [+ ballistic] / ___ [+ syllabic, − nasal, − stress]

b. /t/ → [+ ballistic] / ___ # [+ syllabic, − nasal]

The general assumption made about tapping is that it occurs in intervocalic position. It is more accurate to say that tapping occurs in ambisyllabic position (Kahn 1980). Since vowels form peaks of syllables and the alveolar stop is in intervocalic position, the stop can either be in the coda of the first syllable or the onset of the second syllable. Tapping can only occur if /t/ is in both the coda and the onset – that is, in ambisyllabic position (Crystal 1997, 18; see also Perlmutter 1995, Kahn 1980).

(20) /t/ → [+ ballistic] / $\overline{\text{Coda (\#) Onset}}$

In order to be able to be tapped across word boundaries, the /t/ must originate in syllable rhyme position. This /t/ is then 'captured' during syllabification by the "unoccupied onset at the beginning of a following word" (Harris 1994, 199). Capturing of the onset allows medial /t/ to be tapped across word boundaries, even preceding a stressed syllable. At the same time, the coda from which /t/ is captured does not relinquish its claim on /t/. This allows for /t/ to be associated with both the coda of the first syllable and the onset of the second syllable. The tap becomes ambisyllabic. The capturing of the coda is motivated by the Maximal Onset Principle, which states:

(21) There is a strong tendency to syllabify in such a way that initial syllable-onset clusters are of maximal length, consistent with the general phonotactic constraints on word-initial consonant clusters (adapted from Kahn 1980, 41; see also Harris 1994, 54; Giegerich 1992, 170).

Within words such as *pity*, Onset Maximisation (21) would assign /t/ to the onset of the second syllable, yielding [pɪ.ti]. By virtue of not being associated with a syllable rhyme, /t/ cannot be tapped. Harris proposes a rule called Coda Capture.

(22) Coda Capture attaches "the consonant associated with the onset of the unstressed syllable to the coda of the stressed syllable" (Harris 1994, 199)[121]

This then allows the /t/ to become ambisyllabic within words and subsequently medial /t/ can be tapped. As with the Onset Maximisation across word boundaries, within words there is no mention of the onset relinquishing its claim on /t/ in Coda Capture.

[121] Coda Capture is intended to be a neutral term to describe the mechanism of tapping. That does not imply that Harris's Government Phonology will provide the basic phonological framework for this thesis.

There are two important constraints on the onset from which /t/ is captured into a coda. These constraints have been mentioned already. First, within words, the syllable from which /t/ is captured must not have stress. However, the syllable which does the capturing need not necessarily be stressed, as can be seen in three-syllable words e.g. *competent* ['kɑmpɪɾn̩t] (see footnote 113 above). The second constraint is that Coda Capture can only apply word-internally. The /t/ cannot be captured from a word-initial position except for *to*, *tomorrow* and *tonight* (see footnote 120 above). Coda Capture applies after syllabification takes place but still respects juncture – that is word and morpheme boundaries (SPE, 75). For the remainder of this discussion, 'syllabification' will include Coda Capture as well as Onset Maximisation, unless otherwise specified.

In an autosegmental or prosodic approach to phonology, it is possible to have one (intervocalic) consonant multiply assigned (Perlmutter 1995). In this case, the multiple association would be with the coda of the first syllable and the onset of the following syllable. Once there are multiple associations for intervocalic /t/, then tapping becomes possible. In this thesis, ambisyllabicity is assigned through two rules: Onset Maximisation (21) and Coda Capture (22).

With respect to syllable structure, alveolar stops can only be tapped if they can be made ambisyllabic, regardless of how the consonant in question becomes ambisyllabic.

(23) a. /t/ → [+ ballistic] / $\overset{\text{Rh}}{\_\_}\overset{\text{On}}{\text{V}}\_\_$ $\begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \\ - & \text{stress} \end{bmatrix}$

b. /t/ → [+ ballistic] / ___ # $\begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \end{bmatrix}$

Ambisyllabicity is a result of syllabification. Word-internal medial alveolar stops can be made ambisyllabic only if both Onset Maximisation and Coda Capture can be applied. A syllable-onset /t/ preceding a stressed vowel within the same word blocks Coda Capture, and hence ambisyllabicity. Across word boundaries, Onset Maximisation permits tapping, e.g. *sought Ed*. In this example, Coda Capture does not need to apply because the coda is already occupied. However, word-initial /t/ is blocked from Coda Capture as in the example of *buy tomatoes*, above. Since Coda Capture is blocked, /t/ cannot be made ambisyllabic. If /t/ is prevented from becoming ambisyllabic, then it is also prevented from becoming a tap.

4.2.1.4 Segments Preceding Tapped /t/

The discussion thus far has assumed that a tapped /t/ is intervocalic, or more precisely, that it is ambisyllabic. All of the examples have had /t/ intervocalically and it has been shown that /t/ must occur *before* a vowel or a [+ syllabic] liquid in order to be tapped. Giegerich (1992, 242) lists tapping as occurring between sonorants. Picard (1997, 285, fn.1) strongly refutes this as "patently false since no one flaps before or after a nasal, or before anything but a vowel, and only a minority of speakers do so after laterals". It is also true that, in adhering to the restrictions stated about ambisyllabicity, intervocalic position is the primary environment in which tapping of /t/, /d/ and /n/ can occur. The discussion up to this point agrees that a tap occurs only before a vowel or at least a non-nasal syllabic. However, the arguments presented in the previous section about what is or is not 'syllabic' also applies to segments preceding /t/.

Bauer *et al* (1980, 38) state tapping is possible "when an /r/ intervenes between the stressed vowel and /t/: *barter*, *porter*" as well as "after /n/ and /l/: *winter*, *shelter*". The *English Pronouncing Dictionary* lists a tapped [t̺] ([ɾ]) after /r/, /l/ and /n/, and in the same ambisyllabic position as outlined above. These three consonants have a common place of articulation, as well as all being sonorants. To say that /t/ is tapped after a sonorant may be too broad a context – nobody taps after /m/, for example – but it is not 'patently false'.

Returning to syllabic liquids, /lt/, /ld/, /ln/, /rt/, /rd/ and /rn/ are not permissible onset clusters in English. Therefore, in any of these six clusters, the first element – either /l/ or /r/ – must be in a syllable rhyme. It was briefly argued in the previous section that the two liquids behave differently in syllable rhymes than in syllable onsets. It will further be argued in chapter 7 below that syllable-rhyme /r/ is [– consonantal], following the arguments of Kahn (1980, 120-123, 149-151).

Kahn mentions that in a lateral and tap cluster, the /l/ is a not consonantal. A dark [– consonantal] [ɬ] is the syllable-rhyme realisation for some speakers of GA (Kahn 1980, 94-95, 163). As was mentioned in the previous sections, for many GA speakers, the [– consonantal] syllable-rhyme /l/ is actually vocalised – that is, becomes a vocoid or a vowel-like segment with no contact between the tongue and the palate (Wells 1982, 313). Since syllable-rhyme /l/ can be considered a vowel following an underlying /t/ in order to permit tapping, it must stand to reason that for some speakers, a syllable-rhyme /l/ preceding a potentially tapped /t/ can also be considered a vowel.

Harris (1994, 218) claims that a lateral preceding a potentially tapped /t/ has an inhibiting influence while Spencer (1996, 231) and Giegerich (1992, 242) claim that the tapping of /t/ can

happen after any sonorant. There are so many contradictory claims partially because tapping after /l/ is variable with regard to age and region (see Picard 1997, 288-289, for example). Further research must be conducted in order to determine the causes of the variability. In this thesis, it will be accepted that tapping after /r/ is obligatory, tapping after /l/ is variable and tapping after non-alveolar nasals is prohibited. Tapping after /n/ will be discussed shortly.

The argument for a [– consonantal] syllable-rhyme /l/ is meant to account for the variable nature of tapping after laterals. The variability will be assumed to be in the consonantal nature of syllable-rhyme /l/. If, in a speaker's idiolect, syllable-rhyme /l/ is [– consonantal], then /t/ can be tapped after /l/ in ambisyllabic position, much like the obligatory tapping after syllable-rhyme /r/. If, on the other hand, /l/ is always [+ consonantal] for a speaker, even a velarised [ɬ], then tapping of /t/ is inhibited. These conditions on tapping apply to all alveolar stops[122].

(24) a. /t/ → [+ ballistic] / [– consonantal] Rh On --V-- [+ syllabic, – nasal, – stress] / [– consonantal]

b. /t/ → [+ ballistic] / [– consonantal] ___ # [+ syllabic, – nasal]

Up to this point, all alveolar stops are subject to medial tapping, since [voice] has implicitly not specified in the input (see (16) and footnote 108 above). The voiced stop /d/ is subject to tapping after vowels and liquids, if /l/ is [– consonantal]. The same is applicable for medial /n/, although there are very few instances /ln/ clusters where /n/ is not in morpheme-initial position, e.g. *kilning*, *?alnico*. By being in morpheme- or word-initial position, Coda Capture is blocked, /n/ cannot be made ambisyllabic and thus /n/ cannot be tapped after /l/.

The distinction between the obstruents /t/ and /d/ is neutralised in the context listed in (24). This neutralisation of /t/ and /d/ raises some important phonological and sociolinguistic implications, unfortunately, these implications are not discussed here. This thesis looks at the acquisition of /t/ in ambisyllabic environment. No data was collected concerning medial /d/, so discussion about the neutralisation of /t/ and /d/ cannot be made. It is accepted that such neutralisation is permissible in the simple generative phonological framework followed in this thesis. In a generative framework, one rule is permitted to feed into another, for examples rules (27) and (28), below.

Fox and Terbeek argue that the vowel becomes shorter when it precedes an underlying /t/, which is voiceless. Some time in the phonological derivation after the shortening of the vowel,

[122]The reason [– consonantal] is not used in the context following a tap is because tapping is obligatory before syllabic /l/, even for those speakers for whom syllable-rhyme /l/ is [+ consonantal].

tapping applies, producing a distinction for some speakers between *rider* and *writer* (Fox and Terbeek 1977).

The remainder of the discussion is only applicable to /t/, since the acquisition of the tapping of /t/ is the main concern of this chapter. In the rules listed up to this point, /t/ has implied inclusion of /d/ and /n/ as well. For the remainder of the discussion /t/ will exclusively mean a voiceless, alveolar stop.

(25)
$$\begin{bmatrix} - & \text{syllabic} \\ + & \text{consonantal} \\ - & \text{sonorant} \\ + & \text{coronal} \\ - & \text{voice} \\ - & \text{continuant} \end{bmatrix}$$

For the voiceless /t/, if an /n/ intervenes between the [– consonantal] segment and the ambisyllabic position, there would be no motivation for Coda Capture to apply. Indeed, Picard argues that "no one flaps... after a nasal" (1997, 285, fn.9). However, Picard later concedes that a single nasalised tap [ɾ̃] can represent an underlying /nt/ (1997, 290). To account for this, Picard proposes "a rule of postnasal /t/-deletion before unstressed vowels" (1997, 291). In fact, assuming Coda Capture can apply, the deletion of /t/ occurs in the same ambisyllabic tapping environment, with the exception of the intervening nasal. Instead of /t/ → [ɾ] in rule (24), the medial /t/ is deleted after a nasal consonant.

(26) a.
$$/t/ \rightarrow \emptyset \,/ \begin{bmatrix} + & \text{consonantal} \\ - & \text{nasal} \end{bmatrix} \quad \overset{\text{Rh}}{\underset{\text{On}}{\text{--}\breve{\text{V}}\text{--}}} \quad \begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \\ - & \text{stress} \end{bmatrix}$$

b.
$$/t/ \rightarrow \emptyset \,/ \begin{bmatrix} + & \text{consonantal} \\ - & \text{nasal} \end{bmatrix} \text{---} \# \begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \end{bmatrix}$$

This leaves /n/ in the same ambisyllabic environment as the deleted /t/, and /n/ is also susceptible to medial tapping (24). This means that /n/ will become a nasalised tap [ɾ̃]. Potentially *winter* can be homophonous with *winner*, [wɪɾ̃ɚ] (See (Jensen 1993, 150)).[123].

Before tapping can occur, syllabification takes place. Then, the deletion of /t/ occurs (rule (26)) and then the tapping of rule (24) applies. Medial /n/ gets assigned to both an onset and a coda. This is a fairly accurate and concise description of what happens to medial /t/ and medial /nt/.

However, a slightly different interpretation of /nt/ tapping will be presented. This interpretation is based on Chomsky (1964). The reason for presenting this older interpretation

[123]For the author, *winter* and *winner* are homophonous in the D1 (GA). However, some speakers of GA maintain a distinction between the two words and similar pairs (Shockey, p.c.).

	winner	winter
Underlying representation	/wɪnəɹ/	/wɪntəɹ/
t-deletion (26)	—	[wɪnəɹ]
syllabification (21) (22)	rh on	rh on
	∨	∨
	[wɪnəɹ]	[wɪnəɹ]
tapping (24)	[wɪr̃əɹ]	[wɪr̃əɹ]

Table 4.1: Derivation of /nt/ with t-deletion

will be explained below. This different interpretation begins with the nasalisation of vowels preceding a nasal consonant.

(27) $\begin{bmatrix} + & \text{syllabic} \\ - & \text{consonantal} \end{bmatrix} \rightarrow [+\text{ nasal}] / \_\_\_ \begin{bmatrix} - & \text{syllabic} \\ + & \text{consonantal} \\ + & \text{nasal} \end{bmatrix}$

(based on Chomsky 1964, 82; see also Giegerich 1992, 214-216; Hammond 1999, 8-10)

Following the nasalisation of the vowel, the nasal consonant can be deleted.

(28) $\begin{bmatrix} -\text{syllabic} \\ +\text{consonantal} \\ +\text{nasal} \end{bmatrix} \rightarrow \emptyset / \begin{bmatrix} +\text{syllabic} \\ -\text{consonantal} \end{bmatrix} \text{---} \begin{bmatrix} -\text{syllabic} \\ +\text{consonantal} \\ -\text{voice} \end{bmatrix} \begin{bmatrix} +\text{syllabic} \\ -\text{consonantal} \end{bmatrix}$

(based on Chomsky 1964, 82)

The voiceless plosive /t/ is once again in an ambisyllabic position and thus susceptible to tapping. Tapping comes in the form of rule (24), repeated here to take into account the presence of the nasal consonant at the underlying level[124].

(29) a. $/t/ \rightarrow [+\text{ ballistic}] / [-\text{ consonantal}] \left(\begin{bmatrix} + & \text{consonantal} \\ + & \text{nasal} \end{bmatrix} \right) \overset{\text{Rh On}}{\text{--V--}} \begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \\ - & \text{stress} \end{bmatrix}$

b. $/t/ \rightarrow [+\text{ ballistic}] / [-\text{ consonantal}] \left(\begin{bmatrix} + & \text{consonantal} \\ + & \text{nasal} \end{bmatrix} \right) \text{---} \# \begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \end{bmatrix}$

In many non-standard varieties of English in Britain, medial /t/ after /n/ can follow very similar processes. That is, vowels are nasalised before nasal consonants, the nasal consonant is optionally deleted, onsets are maximised and Coda Capture is applied making /t/ ambisyllabic. The main difference is that the medial /t/ in many accents of the English in Britain is realised as a glottal stop [ʔ] rather than a tap [ɾ][125].

Additionally, the [– consonantal] of rule (24) or (29) can also include /ɹ/ (for rhotic varieties), the off-gliding [ə] (for non-rhotic varieties) and /l/.

[124]Since the nasal consonant has been deleted, listing it is technically unnecessary. The derivation presented in rules (27) and (28) also potentially allow for *cat* and *can't* to be distinguished on the surface only by nasalisation. The /æ/ of *can't* is nasalised and the /n/ is deleted, yielding [kæ̃t], compared to [kæt] for *cat* (Jensen 1993).

[125]The glottal stop realisation of intervocalic /t/ in SBrE carries some stigma, though (Wells 1982, 324-325).

	scented GA	*scented* UK
Underlying Representation	/sɛnt + əd/	/sɛnt + əd/
vowel nasalisation (27)	[sɛ̃ntəd]	[sɛ̃ntəd]
nasal deletion (28)	[sɛ̃təd]	[sɛ̃(n)təd]
syllabification	rh on	rh on
	∨	∨
	[sɛ̃təd]	[sɛ̃(n)təd]
/t/-lenition (24) or (29)	[sɛ̃rəd]	[sɛ̃(n)ʔəd]

Table 4.2: Derivation of /nt/ with nasal deletion

The rule of nasal deletion (28) is optional in non-standard British varieties of English in this environment. The derivation thus far leaves a nasalised vowel followed by a tap in GA. The tap still needs to be nasalised.

(30) [ɾ] → [+ nasal] / [+ nasal] ___

Rule (30) implies that the feature of nasality can spread to the tap either from the adjacent nasal consonant or, if that consonant is deleted, from the nasalised vowel. The spreading of nasality from a vowel is uncommon. The nasalisation of a vowel is usually due to an adjacent nasal consonant. The nasal consonant may have been deleted historically (e.g. French) or as listed in (28) above, but only after the adjacent vowel has been nasalised. The further spreading of nasalisation from the vowel to the tap seems unlikely since nasalisation is not normally part of the underlying structure of the vowel in English.

The presentation of tapping summarised in table 4.2 was made to draw parallels between GA and non-standard British varieties of English. With the spreading of nasality first from /n/ to the vowel and then back from the vowel to the tap being unlikely, the presence of a nasalised tap [ɾ̃] is probably a tapped /n/.

An alternative explanation for the tapping of /nt/ clusters involves a slight re-ordering of rules. The derivation begins with syllabification. Onset Maximisation would assign the /t/ to the onset of the second syllable. Coda Capture would then associate the /t/ with the rhyme of the first syllable without de-linking the onset association. This would make /t/ ambisyllabic and thus susceptible to tapping. The spreading of nasality from /n/ to the vowel also spreads to the tap. Then, the nasal consonant is deleted.

This argument has an advantage in that a tapped /t/ is adjacent to a nasal consonant and thus can inherit the feature of nasality from /n/ rather than a vowel. Unfortunately, there is no motivation for Coda Capture. One of the main motivations for Coda Capture is to make the capturing syllable a closed syllable or, perhaps, a heavy syllable. With /n/ already in the syllable rhyme, there is no phonotactic need to fill the coda with another consonant. This

	scented
Underlying Representation	/sɛnt + əd/
Onset Maximisation (21)	on
	|
	[sɛntəd]
Coda Capture (22)	rh on
	∨
	[sɛntəd]
tapping (24)	[sɛnɾəd]
nasalisation (27)	[sɛ̃nɾ̃əd]
nasal deletion (28)	[sɛ̃ɾ̃əd]

Table 4.3: Alternate derivation of /nt/ with nasal deletion

explanation requires a stipulation that allows Coda Capture to apply to syllables closed by /n/, not to mention a stipulation of progressive and regressive assimilation of nasality.

It must be noted that tapping after an underlying nasal is only applicable to /t/. The voiced stop /d/ remains a stop after a nasal.

sent it	[sɛɾ̃ɪt]	set it	[sɛɾɪt]
send it	[sɛɾ̃dɪt]	said it	[sɛɾɪt]

Combined with the need to delete the nasal /n/ or the /t/ in /nt/ clusters – the deleted consonant depends on which of the above explanations is preferred – it seems that a tap cannot occur adjacently to another consonant capable of becoming [+ ballistic].

Any single alveolar stop consonant can be tapped in ambisyllabic position, as listed in rule (24). The process of tapping does not like two adjacent alveolars. For those who tap /t/ after /l/, /l/ must become [– consonantal] in a separate process. The unlikely realisation of [nɾ] – the impossible tapping after a nasal that Picard mentions but does not elucidate – is instead realised as a single nasalised tap [ɾ̃]. The stops /n/ and /t/ cannot become [– consonantal]. Therefore, one of the two obstruents must be deleted. The first explanation that was presented is most likely: that is, the deletion of /t/ and subsequent tapping of /n/. The motivation for the deletion of /t/ is explained by the fact that tapping can only occur after a [– consonantal] vocoid. The voiceless stop /t/ can be deleted without further explanation. However, if /n/ is deleted, then an explanation is needed either for the spreading of nasality to the tap from a vowel or for the application of Coda Capture by a coda that is already occupied.

These last two explanations are not completely superfluous. The first explanation – nasal deletion before syllabification – has parallels with non-standard British varieties of English. Although the standard accents are the primary accents investigated, a glottal stop realisation of medial /t/ exists in the interdialects of some of the participants. This first alternative explanation and derivation might closely match the interdialects of those that produce medial glottal stops

and medial taps. The second explanation – nasal deletion after syllabification – is simply an attempt to reconcile the discrepancies of the first explanation but there are just as many questions raised with the second explanation.

The three explanations involve the same input (/nt/), the same output ([r̃]) and, by and large, the same rules (consonant deletion, nasalisation, syllabification and tapping). The main differences in the explanations are the consonant that gets deleted (/t/ or /n/) and the order in which the rules apply. From the perspective of a monodialectal speaker of GA, it will be accepted that Picard's explanation, outlined in table 4.1, is the most likely. While the other two explanations or less likely representations of monodialectal speakers of GA, they might reflect possibilities within the interdialect. A native GA speaker acquiring SBrE, for example, may start deleting /n/ instead of /t/ and produce a nasalised vowel before a glottal stop. The second explanation of /nt/ tapping, outlined in table 4.2, might then reflect the idiolect of this hypothetical speaker. The three explanations are not only alternatives for tapping in GA, they are potential representations of interdialectal development of /nt/.

In summary, tapping in GA occurs during the syllabification process, assuming that Onset Maximisation and Coda Capture are two separate processes. Tapping can only occur after a [– consonantal] segment. The liquids /l/ and /r/ become [– consonantal] in syllable rhymes; /r/ obligatorily and /l/ optionally, depending on the speaker. The assignment to a syllable rhyme can only occur as part of the syllabification process, accompanying Onset Maximisation. After liquids become [– consonantal], an alveolar stop, /t/, /d/ or /n/ can then be assigned through Coda Capture to a rhyme that contains a vowel or a [– consonantal] liquid. In the environment following a tap, a tap can only be realised before a vowel or before syllabic liquids. The realisation of intervocalic /nt/ clusters as a nasalised tap [r̃] requires the deletion of /t/. Once /t/ is deleted, /n/ must be in an environment that allows it to become ambisyllabic and thus /n/ alone becomes tapped.

(31) a.
$$\begin{bmatrix} - & \text{syllabic} \\ + & \text{consonantal} \\ - & \text{continuant} \end{bmatrix} \rightarrow [+\,\text{ballistic}] \,/\, [-\,\text{consonantal}] \quad \overset{\text{Rh}\quad\text{On}}{\text{--}\backslash/\text{--}} \quad \begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \\ - & \text{stress} \end{bmatrix}$$

b.
$$\begin{bmatrix} - & \text{syllabic} \\ + & \text{consonantal} \\ + & \text{coronal} \\ - & \text{continuant} \end{bmatrix} \rightarrow [+\,\text{ballistic}] \,/\, [-\,\text{consonantal}] \_\_\_ \,\#\, \begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \end{bmatrix}$$

/t/ → [ɾ]
/d/ → [ɾ]
/n/ → [r̃]
/nt/ → [n] → [r̃]

4.2.2 Southern British English

Tapping also occurs in SBrE, but much less frequently. Lass claims that "in RP and many British dialects, tapping occurs only across word boundaries, i.e. the *hit him* types; between vowels there are either ordinary stops [t d] or a voiceless tap [ɾ̥] for /t/" (Lass 1987, 101). However, Wells reports that tapping is possible within words such as *butter* ['bʌɾə] and *shouted* ['ʃæəɾɪd] in Cockney (Wells 1982, 324). It has also been noted that /t/ is tapped word-internally and across word boundaries "in certain casual styles in British accents ranging from RP to Cockney" (Wells 1982, 250). In Estuary English, the tap is a compromise between the stigmatised glottal stop [ʔ] and the 'artificial' voiceless, aspirated alveolar stop (Tollfree 1999, 170-171)[126].

Tapping itself in SBrE is not important. What is important is that medial /t/ can undergo some sort of change in several varieties of British English. This change is most often manifested as the glottal stop [ʔ]. The /t/ loses its coronal stricture "with the residual reflex being realized with glottal stricture" (Harris 1994, 121). According to Harris, this loss of supralaryngeal stricture is called debuccalisation which is a form of consonant lenition (1994, 120f.). Harris considers debuccalisation and tapping as two different types of lenition.

For many speakers of SBrE, the glottalisation of /t/ – the realisation of /t/ with glottal reinforcement [ʔt] or only as a glottal stop [ʔt] – is restricted to syllable rhymes (see Wells 1982, 260; Harris 1994, 199ff.; see also, below). The syllable rhyme – more specifically, the syllable coda – is one of the most-cited locations for consonant lenition (Harris 1994, 194)[127].

The complete glottalisation of /t/ carries a certain amount of stigmatisation[128], although this does not mean that standard (educated London) speakers never produce a glottal stop – e.g. intervocalically across word boundaries: *that is* [ðæʔ 'ɪz]; *quite easy* [kwaiʔ 'ɪizi] (Wells 1982, 324). In some, more casual registers, the total glottalisation of /t/ can occur in the same ambisyllabic environment as listed for GA tapping, with the same restrictions on juncture and stress. Irrespective of the actual output, the environment in which GA /t/ can be tapped overlaps the environment in which /t/ in British varieties of English can undergo total glottalisation (Wells 1982, 260-261).

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[126] 'Artificial' is one of the terms that Wells (1982) uses in describing the perception of the aspirated stop in medial position.

[127] Giegerich (1992, 221) uses the term 'glottalisation' to refer to both phenomena of glottal reinforcement and glottal replacement. Wells (1982, 260) entitles his section 'Glottalisation', but refers to the process as glottaling or glottal reinforcement. Harris (1994, 199ff.), too, uses the term 'glottaling'.

[128] Further discussions regarding /t/ and glottalisation will refer to complete glottalisation of /t/, not glottal reinforcement or co-articulation unless it is otherwise stated.

It is postulated that the glottalisation of /t/ is a variable rule in the competence of most speakers of SBrE. There might not ever be performance of the rule. But even a conservative SBrE speaker will have an awareness of a complete glottal realisation of /t/, most likely because this type of speaker assigns the stigmatisation[129].

For the most part, intervocalic /t/ is realised as a voiceless plosive in Southern British English. For many speakers of SBrE, the lenition of /t/ in an ambisyllabic environment is never realised: /t/ remains [t] intervocalically. It is this realisation that is assumed to be the target for American speakers in Britain. This target implies that there is no tapping or glottalisation rule in the target variety to be acquired. However, for some, the glottal stop is a potential realisation.

4.2.3 GA and SBrE Compared

For Americans acquiring SBrE (t)[130], the process is fairly straightforward. In ambisyllabic environment, /t/ should be no longer be realised as a tap [ɾ], but as a voiceless alveolar stop [t]. This effectively is the suppression of the tapping process. The realisation of the voiceless stop [t] is already part of the phonic inventory of GA[131], which should facilitate acquisition.

The tap [ɾ], though, might not be part of the native SBrE phonic inventory, implying that the articulation of the tap needs to acquired in addition to any other rules regarding tapping. For SBrE speakers acquiring GA (t), the complexity of the process depends on the status of (t) in the idiolect prior to D2 exposure. For those who either glottalise or tap /t/ in their idiolect, two things must change in the interdialect. First, the contexts in which /t/ undergoes change may need to be expanded. For those who produced intervocalic glottal stops only at juncture – that is, at word or morpheme boundaries (SPE, 75) – the rule needs to be expanded to include word-internal occurrences. Those who tap natively may possibly need to expand tapping so that it can apply across word boundaries, too. These speakers also need to acquire a rule that deletes /t/ after /n/ when the /nt/ cluster is intervocalic. The input to tapping also needs to be expanded to include /n/ and /d/, although the tapping of /n/ and /d/ is not tested. All of these changes are relatively minor if some rule governing intervocalic or syllable-coda /t/ already exists in the native dialect.

[129] See Wells (1982, 324-325). This observation is also made informally from tutoring first year Linguistics, where there is an assignment getting students to determine when /t/ can be made a glottal, even if it is not in their own speech.

[130] Rounded brackets indicate a 'sociolinguistic variable', meaning that the actual phones in question vary between the dialects. See section 1.4.

[131] The phonic inventory is the inventory of output or realisational phones. See section 2.6.1.

For those who do not have a rule that transforms /t/ to a tap or a glottal stop, then the rule itself needs to be acquired. This entails Coda Capture ((22))[132] as well as the general structure of the rule governing ambisyllabic alveolar stops. In acquiring the rule, these speakers must also acquire the articulation of a tap. However, it is assumed that there are few of these kinds of speakers. Some sort of rule probably already exists somewhere in the native competence that transforms an underlying /t/ to a glottal stop or a tap, even if such a rule is not realised in the performance.

4.3 Historical Analysis

The tapping of ambisyllabic /t/ is a fairly recent phenomenon. Kenyon describes /t/ as voiced in a medial environment, but insists that "voiced *t* is not the same as *d*, and does not belong to the *d* phoneme, since Americans do not confuse such words as *latter* [læt̬ɚ] ~ *ladder* [lædɚ], or *putting* [pʊt̬ɪŋ] ~ *pudding* [pʊdɪŋ]" (Kenyon 1994, 126). Trager (1942) and Trager and Smith (1951) concur with Kenyon.

Oswald (1943) demonstrates that /t/ and /d/ both undergo a tapping rule, which neutralises the distinction. Oswald concludes that the sound change started at least a generation before his report, if not earlier.

Lehmann (1953) observes what he calls a 'voiceless *d*' in medial position, in words like *bidder* [bɪtɚ][133]. Lehmann proposes that the de-voicing of /d/ is a hypercorrect analogy to being prescribed a voiceless /t/ in words like *better* [bɛtɚ]. This hypercorrection-by-analogy suggests a sound change in progress: the neutralisation of /t/ and /d/ in certain contexts (cf. Shockey 1984).

This entire debate, combined with lack of comment from earlier descriptions of American English – there is nothing in Mencken (1936), Krapp (1925) or Francis (1958), for example – suggests that the voicing of medial *t* started at the beginning of the twentieth century at the earliest.

Wells (1982, 250) says that voicing of *t* could have been imported from Ulster or from the southwest of England, where medial tapping also occurs. It is unknown if the changes in these British varieties are due to American influence or are independent innovations. The ubiquitous nature of tapping in GA supports the idea that this phenomenon is an American innovation that

[132] Assuming Coda Capture does not already exist in the idiolect for processes like intrusive-r and linking-r.

[133] Although Lehmann's raw data are not accessible, 'voiceless *d*' probably simply refers to a voiceless alveolar stop [t] in an environment where a voiced stop [d] is expected, as indicated by the *d* in the orthography

happens to be shared with some British varieties. Regardless, such a discussion is beyond the scope of this thesis.

4.4 Interdialect Analysis of /t/ Tapping

Elicitation of medial /t/ and /nt/ forms was obtained from the items listed in table 4.4. There were forty-two opportunities to produce an ambisyllabic /t/ and twelve occurrences of medial /nt/.

Word List	Picture Cards	Reading Passage
city and country	Numbers 30-40	eternity
what is a watt		but he
metal and plaster		thought occurred
reading and writing		quite amusing
hot water bottle		excited
birthday greetings		better
forty brass monkeys		put on
a naughty tot		so together
the bird sat on the kerb with fur		theatre
caught in a knot		butter on
automatic transmission		bought a
the prettiest girl in the class		bottle water
the slaughter of the Scots		about it
		set up
		water
		out of
painting and drawing	Numbers 20-29	Wanted

Table 4.4: Elicitation tokens for tapping

4.4.1 Americans in Britain

One possible realisation of ambisyllabic /t/ from Americans living in London was a glottal stop [ʔ]. This is a native feature of the local dialect London, although it is not limited to just London, and is subject to sociolinguistic variation (see Trudgill 1986; Wells 1982). The use of a medial glottal stop indicates a change towards the second dialect, even though an alveolar stop [t] is the expected target.

There were five cases in which a glottal stop was uttered in the phrase *but hoped* (bb.rp, eb.rp, jac.rp, af.rp, nf.rp)[134]. If this or the phrase *but he* (eb.rp, lp.rp) were the only instances of a medial glottal stop, it could be explained away by a rule making /t/ a glottal stop in syllable

[134]For the remainder of this thesis, the following conventions will be followed: referring to tokens, (xx.yy), 'xx' indicated the participant (see tables 3.3 and 3.4, above) and 'yy' indicates the task, either the word list, the picture cards or the reading passage; referring to individual participants will be in the form XX.

coda before certain consonantal onsets, a rule that already exists in both GA and SBrE (Wells 1982, 260-261). In fact, the phrase *but hoped* in isolation most probably would be pronounced with a glottal stop. The consonantality of /h/ is fortified by the lexical stress of *hoped.* In casual or rapid speech, though, particularly in function words, /h/ is often deleted – e.g. *is he* [ɪzi] *but he* [bʌri]. In casual speech, a tap would be expected in the phrase *but hoped*, although the /h/ still exerts some aspiration [bʌrʰoʊpt]. As was mentioned in section 4.2.1.2 above, the sound /h/ does not usually block tapping in GA because of its vowel-like articulation[135]. In order for /t/ to be glottalised in this environment, the weakening of casual-speech /h/ would have to be ignored. The /h/ is simply another consonant blocking tapping.

However, there were several cases other than *but he* and *but hoped* in which a glottal stop was realised: *the bird sat on the kerb with fur* (eb.wl, nf.wl); *thought occurred* (eb.rp, nf.rp, es.rp); *quite amusing* (jac.rp, nf.rp, lp.rp); *bought a* (eb.rp, af.rp, nf.rp, lp.rp); *out of* (af.rp, nf.rp). It is clear that a glottal stop is one possible realisation intervocalically, regardless of an intervening /h/.

What is interesting is that none of these glottal stops occur word-internally. They only occur across word boundaries. In this interdialectal situation, a morpheme (or lexeme) boundary is not an optional alternative as it was implied in rule (24-b) or (31-b), rather it is the only option.

(32) /t/ → [ʔ] / [– consonantal] ___ # $\begin{bmatrix} + & \text{syllabic} \\ - & \text{nasal} \end{bmatrix}$

The word boundary strongly suggests a post-lexical rule. The general tapping rule – rule (24) or (31) listed earlier – has two variants. The first variant, (24-a)/(31-a), dictates that the syllable following /t/ must be unstressed. The first variant can apply lexically – that is, prior to interaction with the rest of the linguistic system, e.g. syntax. The second variant – (24-b)/(31-b) – disregards the stress of the following syllable, but in order to ignore the stress, there must be a word boundary. The second variant is a post-lexical version of tapping in general, meaning that there is interaction with other subsystems of the greater linguistic system, in this case, the morphology.

In GA tapping, the word boundary is related to stress of the second syllable. If there is no word boundary, i.e., word internally, then the second syllable must be [– stress] in order for the /t/ to be tapped. With a word boundary obligatory for glottalisation, stress no longer needs to be specified for the second syllable, as can be seen in *but hoped.*

Tapping across word boundaries in GA is redundantly a post-lexical process (24-b)/(31-b). These examples of a glottal stop indicate a change only to the post-lexical application

[135] See footnote 112, above.

of tapping. The glottalisation of /t/ is restricted to word boundaries and cannot occur word-internally. Tapping, though, is still permissible word-internally. The D1 post-lexical rule of (24-b)/(31-b) has led to the development of rule (32) in these speakers' interdialects. In the new rule (32), the underlying representation remains the same, /t/, and the governing environment also remains the same, a boundary before a vowel-initial word. Only the output has changed in these cases.

For the two participants who produced the most glottal stops, EB and AF, the glottal stop [ʔ] was the only alternate to the tap [ɾ]; there were no voiceless alveolar stops [t] in contexts otherwise associated with the tap [ɾ][136]. The glottal stop and the tap were not quite in complementary distribution for these two speakers. A glottal stop occurs only across word boundaries and never word-internally, but the tap occurs in both environments.

Phonologically, there are a couple explanations for the post-lexical tap/glottal stop alternation. It is possible, in keeping with an SPE generative phonological framework, that both the tapping rule (24-b)/(31-b) and the glottalisation rule (32) are part of the interdialectal phonology. In the post-lexical phonological derivation process, the order in which these rules apply varies. Such variability must be permissible in an interdialectal phonology, as was argued in section 2.2.2. If one rule applies before another, the output of that rule – either the tap or the glottal stop – cannot serve as an input into the other rule, since both rules require /t/ as an input. One drawback to this explanation is that there are two very similar rules in the phonology. As was just mentioned, the input and the governing environments for both rules are the same, only the surface representation varies. It seems a bit redundant to have two such similar rules in the phonology even though there is nothing to prevent such such redundancy. Another explanation is that there is one post-lexical rule governing medial /t/, and the output of that rule varies. This clearly is a departure from an SPE-like phonological framework. Yet, it also adequately accounts for the tap/glottal alternation before juncture in a less theory-specific manner. In either explanation, the outputs [ʔ] and [ɾ] are competing with one another, whether because of variability in the application of two different rules or because of variability in two potential outputs of one rule[137].

[136]It is interesting to note that nineteen of the twenty-one cases of a glottal stop were in the reading passage. This is probably due to the fact that there were three word boundary /t/s in the word list and ten in the reading passage.

[137]The terms 'competing' and 'competition' are used instead of 'vary' or 'variable' and the like. This is to avoid confusion with the term 'variety', which was defined in chapter 1 as an accent, language, dialect or idiolect. 'Competition' also avoids use of the term 'variable' which is generally used throughout this thesis in regards to the phonological phenomena under examination

In addition to a tap and some sort of voiceless stop, intermediate responses[138] included a voiced stop. A tap has been described as a "brief articulation of a stop" (Crystal 1991, 346). Using one of the adults who did not demonstrate any dialectal change (JB) as a control, the average duration of a medial tap representing an underlying /t/ was 20 milliseconds (see also Kenyon 1994, §315-318; Olive, Greenwood, and Coleman 1993, 329-330) while other voiced stops in comparable environments had a duration ranging from 45ms to 60ms. With the experimental participants, there were numerous examples of a (partially) voiced segment that had a duration of 50ms. Those were classified as D1 taps, essentially a voiced [t̬]. Three tokens, however, had unusually long voiced stops in lieu of taps: *birthday greetings* (jec.wl) 125ms (4.3); *theatre* (hs.rp) 90ms (4.1); *better* (af.rp) 70ms (4.2).

All three examples have rather long durations, compared to the 20-30ms of a tap produced by the control participants. The ballistic nature of a tap is no longer present. Combined with those 'taps' that had a stop-like duration, it can be seen that the composite properties of a tap are in the process of separating. There are two main composite properties of a tap. The first is that a tap is voiced. The medial /t/ of *better* (af.rp)(figure 4.2) is clearly voiced throughout its articulation, showing that at least the voiced nature of the tap is still present. The second property of a tap is the ballistic or rapid articulation. The example of *greetings* (jec.wl)(figure 4.3) shows a rather long duration of 120ms for /t/. Lastly, in *theatre* (hs.rp)(figure 4.1), the brief, initial voicing of the underlying /t/ may be caused by an incursion of the voicing of the surrounding environment (Shockey, p.c.), though the voicing does not last throughout the articulation of the /t/. The ballistic nature of the tap has already ceased as shown by the duration of the /t/ utterances in figures 4.1, 4.2 and 4.3. These three examples show how the voiced nature of the tap begins to cease, as well. At the same time ambisyllabic /t/ is still subject to some form of phonological manipulation in the interdialect: participants AF and HS still retain taps with an occasional voiceless stop and glottal stop; participant JEC produces almost entirely voiceless stops. Although these three examples show how the output of the rule governing ambisyllabic /t/ (31) changes, the change in the tap itself perhaps only lasts for a short period in the interdialectal development process. However, there is not enough data to pursue that possibility.

The intermediate responses – the glottal stops and the lengthy alveolar stops – are a result of a change in the output of rule (31). At least one rule governing ambisyllabic /t/ exists in the interdialect competence, but the output now varies between a tap and another form. As

[138] Intermediate responses are those that clearly belong to neither the native D1 nor the target D2, as defined earlier in section 2.4.1.

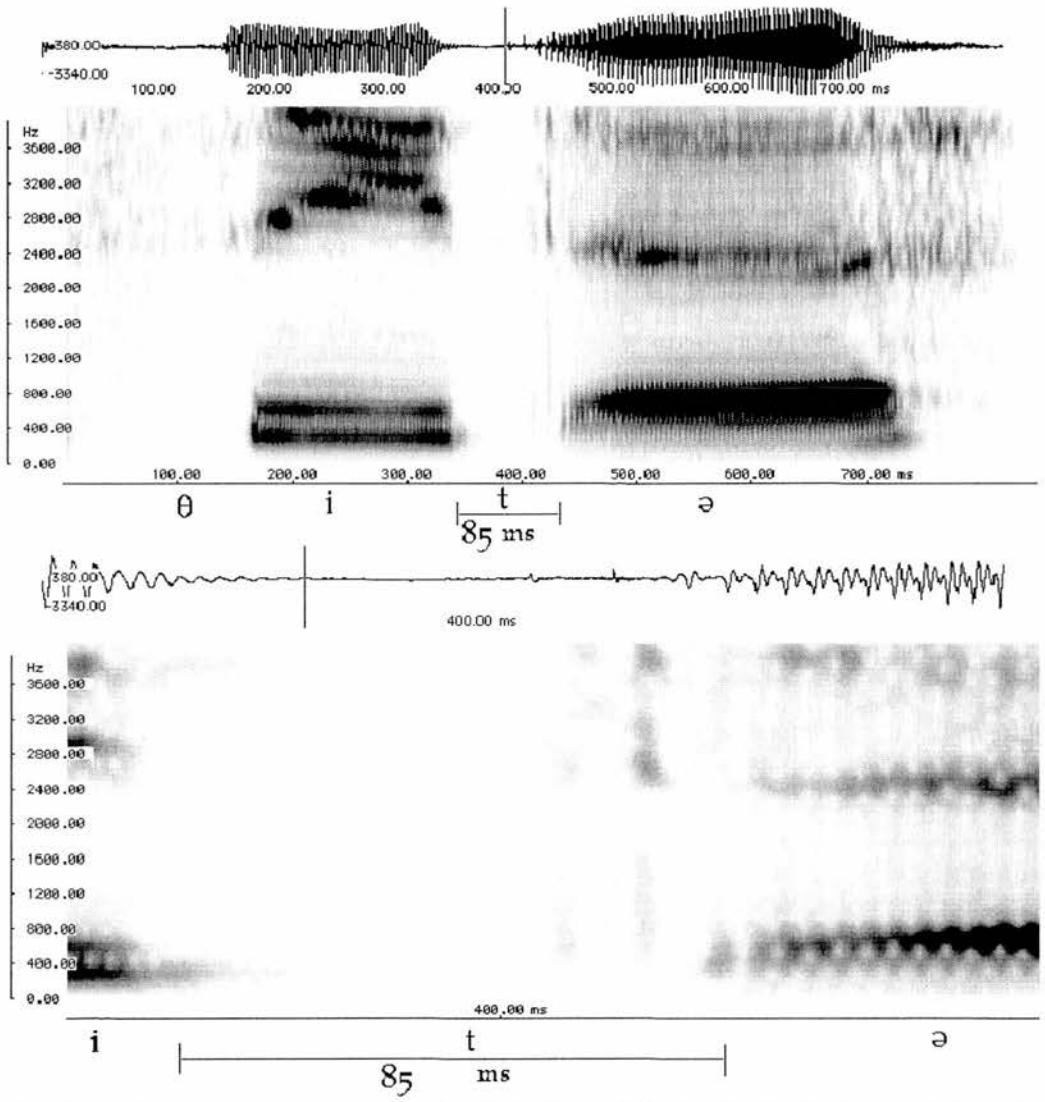

Figure 4.1: theatre (hs.rp)

was previously mentioned, the variation could be due to several similar rules that apply at different times during the phonological process. In any case, there are multiple realisations for an underlying /t/ in ambisyllabic environment.

This analysis of intermediate responses can also be extended to cover a native-like D2 response [t] as one of the other forms competing with the tap as surface representation. Although the voiceless stop [t] is present as an interdialectal output, suggesting the loss of

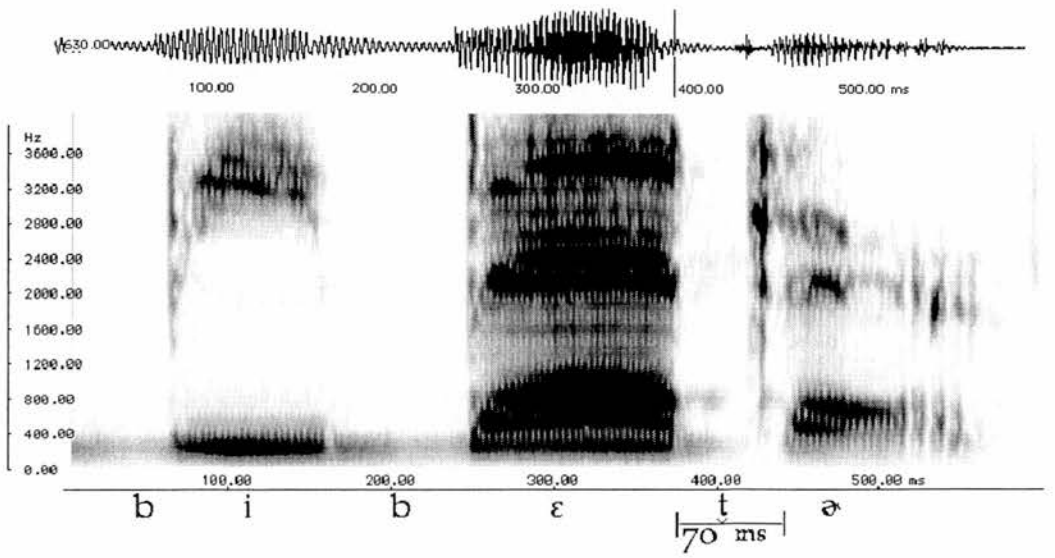

Figure 4.2: better (af.rp)

a rule, the other competing outputs [ɾ] and [ʔ] suggest that some sort of rule still exists, or that multiple rules governing ambisyllabic /t/ compete with the suppression of tapping.

The competition of surface representations is borne out in the data. Even the six speakers who produced over ninety percent voiceless stops medially (JAC, JEC, KN, MN, ROP, JOP) still uttered a D1 tap once or twice. The speakers who produced mostly taps (BB, EB, AF, HS) uttered an occasional voiceless stop. In ambisyllabic environment, two or three output realisations of /t/ are possible, [t], [ʔ] and [ɾ], depending on the speaker. In section 2.2.2 it was stated that a fluid interdialectal phonology must permit a certain amount of ambiguity. The ambiguity in this case is the output of two or three different sounds for the same underlying representation in the same phonological environment. Even those participants who demonstrated almost complete acquisition and those who demonstrated almost no acquisition still produced different output realisations of /t/ in ambisyllabic environment.

Whether through multiple derivational rules or through multiple outputs of a single rule, the notion of competing forms – developed in the previous few paragraphs – allows for variation in subsets semi-independent of variation in the main rule, namely the post-lexical rules(31-b) or (24-b). Any permanent change to the lexical rule potentially has consequences on the post-lexical rule, but not *vice versa*. Across word boundaries, two participants had a glottal stop in competition with a tap (EB, AF), while there were few changes in the output of the lexical rule ((31-a) or (24-a)). Two participants (BB, EB) had acquired a nasal followed by a

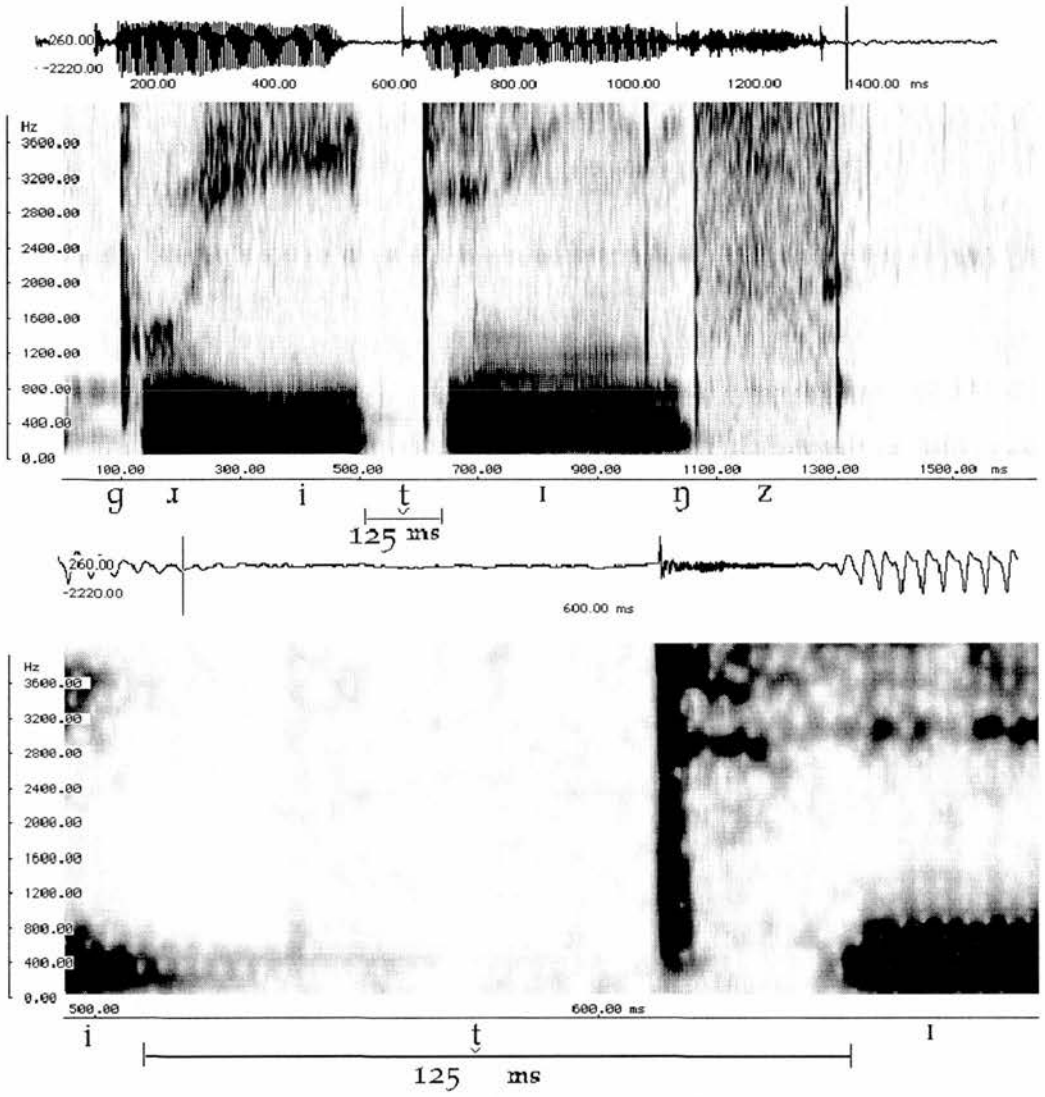

Figure 4.3: birthday greetings (jec.wl)

voiceless stop in lieu of a nasalised tap. This assumes that tapping of /nt/ – the optional nasal of (29) or at least the deletion of /t/ after /n/ when /nt/ is intervocalic – forms a subset of tapping in general. Participants BB and EB lost or re-ordered the rule deleting /t/ after /n/, but they still maintained tapping. Again, there was little change in the output of the main rule. There were three participants (EMB, CC, ES) who uttered between 25% and 75% D2 tokens. Admittedly,

participants EMB and CC are both adults, but still, there is clearly variability between the output forms.

In some varieties of SBrE, there is no rule governing /t/ in ambisyllabic position. There are no taps or glottal stops in this environment. The underlying /t/ is realised as a voiceless, alveolar plosive, with varying degrees of aspiration. Therefore, in order to acquire this pattern as part of a second dialect, it would be necessary to eliminate rule (31) from the idiolect of the native GA speaker. The [t] must categorically be present in ambisyllabic position.

It is proposed that this situation is the ideal 'final state' of complete acquisition of this feature. There were two participants (MN and ROP) demonstrating 100% usage of [t] intervocalically and after /n/ in ambisyllabic position[139]. Since /t/ is always realised as [t] ambisyllabically, the application of rule (31) would be redundant. For the sake of economy, rule (31) could be deleted from the idiolectal phonology.

There was one other speaker (JAC) who achieved 100% interdialectal change of /t/, but she had uttered a glottal stop in *quite amusing* and *but hoped*. The presence of the glottal stop suggests that some rule governing ambisyllabic /t/ still remains in the interdialectal phonology. For participant JAC, it can be postulated that the rule governing ambisyllabic /t/ is a optional. At the other extreme, there is one speaker (EB) for whom the rule of glottalisation is the only approximation of the D2. All other underlying voiceless alveolar stops maintain a tapped surface representation.

The loss of the rule governing tapping is essentially what Chambers (1992) suggests. One of his hypotheses is that "elimination of old rules occurs more rapidly than acquiring new ones" (Chambers 1992, 695; see also example (14)). But if the deletion of the tapping rule (31) were the only means to acquire SBrE (t), then there would be no way to account for glottal stops of non-ballistic alveolar stops in ambisyllabic position.

The acquisition of SBrE-like medial /t/ begins with the manipulation of the output of the tapping rule. Figures 4.1, 4.2 and 4.3. show the phonetic structure of the output undergoing change. The glottal stops show that the/t/ in ambisyllabic position still changes and the glottal stop competes with a tap for some speakers. The glottal stop and the tap are in free variation. There are two participants (AF, NF) for whom there are three possible outputs: [t], [ʔ] or [ɾ]. Three realisations would be difficult to explain if the production of voiceless [t] in ambisyllabic position were only the variable elimination of the tapping rule.

[139] A study of the naturalistic data would be needed to fully determine the extent of acquisition.

We can see that the acquisition of voiceless ambisyllabic [t][140] is the manipulation of the output of the tapping rule. Sometimes, the manipulation may be in the nature of the [ballistic] rendering [d], or in the feature [voice] after [ballistic] has been broken down, which would render [t]. The manipulation of the output might only occur in a part of the tapping rule, such as across word boundaries or after nasal stops.

At other times, the manipulation of the output is the use of another realisation of /t/, such as the glottal stop. Superficially, the change is directly from the tap to the glottal stop, without changing to an alveolar stop [t] in between. There is a rule in GA that changes an underlying /t/ to a glottal stop directly: the glottal stop is realised before pauses (e.g. *cat* [kæʔ]) or before word boundaries followed by a voiceless stop (e.g. *heat caused* [hiːʔ kɔːzd]) (Wells 1982, 179; see also rules (33) and (34)). If glottalisation affected only surface forms, then it would make sense if the tap changed to [t] and then glottalisation could apply to the surface [t]. The presence of both [t] and [ʔ] before word boundaries in participants NF, ED, JAC and LP hints that such a change is in progress. However, it is also possible for those acquiring SBrE that glottalisation applies directly to the underlying /t/ and not to a surface [t] derived from a surface tap: from the perspective of the dialect learner, the same underlying sound /t/ is affected in the same ambisyllabic environment. It is very similar to David's participants acquiring the D2 dark [ɬ] in the same environment as their D1 retroflex [ɭ] (see section 2.7.1). In this case, the glottal stop is assigned directly as a new output to rule (31-b) or there is a new rule (32) that has the same input and same governing environment competing with (31-b) . The result would be an underlying /t/ changing to a glottal stop through derivation. It is also possible that a rule is acquired changing the tap to a glottal stop. This requires a new rule with a new input, the tap, rather than using a pre-existing phonological rule that has the same underlying input /t/ and just changing the output realisation.

In acquiring voiceless [t] in ambisyllabic position, the environment of the rule does not change. A subset might be the only part of the rule that shows any change, for example glottal stops before word boundaries or tapping after /n/. A subset might also be the last vestige of the tapping such as participant JAC having voiceless alveolar stops in all ambisyllabic positions except occasionally at word boundaries. It is possible that rule (31-a) has been deleted from the idiolectal phonology and (31-b) is the only form of /t/ lenition that remains in the interdialect. This also might be an example of a post-lexical process being transferred from the first variety

[140]Bearing in mind that, in this thesis, any 'elimination' or loss or disabling of tapping comes as a direct result of the acquisition – or the attempt to acquire – of a dialectal difference.

to the interdialect – with the exception of the change in output – while the lexical counterpart is not realised in the interdialect (Young-Scholten 1997).

The only major change to the idiolectal phonology in the process of acquiring a voiceless ambisyllabic [t] is the output of the tapping rule. The input remains a voiceless, alveolar stop /t/. The ambisyllabic environment governing an underlying /t/ outlined in (31) does not change. The interdialectal changes in tapping affect almost exclusively the output.

Participant	AgeArr	D1	ID	D2	Percentage change	ID classification
AF	0	35	4	5	20.45	3 x [ʔ], 1 x [d]
NF	1	32	8	5	28.89	7 x [ʔ], 1 x false start
JEC	2.973	0	2	38	100.00	1 x [ʔ], 1 x [d]
JNP	3.058	0	2	38	100.00	2 x false start
HS	4.493	28	3	13	36.36	3 x [ʔ]
ROP	4.715	1	1	41	97.67	1 x [ʔ]
MN	5.321	0	0	45	100.00	
JAC	6.014	1	2	42	97.78	2 x [ʔ]
EB	6.452	35	7	1	18.60	7 x [ʔ]
LP	6.573	5	2	37	88.64	2 x [ʔ]
KN	6.83	1	0	44	97.78	
ES	8.255	36	2	6	18.18	2 x [ʔ]
BB	8.318	42	1	1	4.55	1 x [ʔ]
EMB	18.21	10	1	31	76.19	1 x [ʔ]
CC	31.89	19	1	25	57.78	1 x [t̪]

Table 4.5: Acquisition of medial /t/ for Americans in Britain

4.4.2 Britons in North America

For Americans moving to Britain, it has been inferred that the acquisition of SBrE (t) amounts to acquisition of one surface representation, the voiceless alveolar stop, in the same environment as another, the tap[141]. Britons acquiring tapping cannot use this method. SBrE speakers cannot substitute a tap for all of the [t] realisations to approximate the GA rule. Thus, SBrE speakers have to acquire the tapping rule (rule (31)) or a portion thereof.

How many details of the rule that need to be learned depends on the D1 background. For most accents of English, including SBrE and GA, /t/ can be pre-glottalised or unreleased before a consonant or a pause.

(33) $\emptyset \rightarrow [ʔ] / \left[\begin{smallmatrix} +\text{syllabic} \\ -\text{consonantal} \end{smallmatrix} \right] \left(\left[\begin{smallmatrix} +\text{sonorant} \\ -\text{consonantal} \end{smallmatrix} \right] \right) \left[\begin{smallmatrix} +\text{consonantal} \\ +\text{coronal} \\ -\text{voice} \end{smallmatrix} \right] \text{---} \left\{ \begin{smallmatrix} \# \\ [+\text{consonantal}] \end{smallmatrix} \right\}$

(based on Wells 1982, 260)

[141] This effectively is the disabling of the whole tapping rule, although the data from the previous section show that this is not quite the case.

For some speakers, the /t/ can then optionally be deleted after the glottal stop, leaving an intervocalic glottal stop. The glottal stop realisation of intervocalic /t/ in SBrE carries some stigma (Wells 1982, 324-325).

(34) /t/ → ∅ / [ʔ] ___ {‖, [+ consonantal]} (based on Wells 1982, 260)

If /t/ is after a vowel but before a pause or a consonant, it is reasonable to assume that /t/ is in the syllable coda. So, synthesising rules (33) and (34), /t/ optionally becomes a glottal stop in syllable coda.

Tapping and glottalisation are structurally similar in that both rules entail the change of the same underlying representation, /t/, in roughly the same environment: glottalisation and tapping occur in syllable rhymes; however, tapping occurs in syllable onsets as well as syllable rhymes. The addition of syllable onset for tapping effectively makes SBrE glottalisation and GA tapping two different rules.

Glottalisation in SBrE seems to be the rule that matches GA tapping the closest. As was just mentioned, each rule has the same input and at least partially the same governing context. In order to acquire tapping, native SBrE speakers would have to extend the context in which glottaling can occur to explicitly include a following syllable onset, as well as change the output realisation.

The extent of the glottalisation of /t/ in SBrE varies geographically and, more importantly, socially. In SBrE, as it was defined in section 1.3.2, a glottal stop realisation of intervocalic /t/ occurs only in the most casual registers. The most likely intervocalic glottal stop is before a word boundary because word-internal glottal stops are generally frowned upon (Wells 1982, 260-261; Tollfree 1999, 171- 172). According to the interdialectal data, it would appear that a word boundary accentuates the coda position of /t/. The segment following /t/ need not necessarily be a consonant or a pause, in contradiction to Wells's rules (33) and (34). The juncture clearly establishes /t/ as being in syllable coda and thus susceptible to glottal reinforcement or total glottalisation.

In the interdialectal data, there are several instances of glottal stop realisations of /t/: a total of twenty-eight, as compared to the twenty-one glottal stops produced by Americans in the London area. Once again, the phrase *but hoped* shows the highest incidence of glottal stops. This is most probably due to /t/ falling between an unstressed and a stressed syllable. But given all of the other instances of glottal stops, the foot position of /t/ cannot alone determine a glottal realisation[142].

[142]The notion of foot is defined in section 4.2.1.3.

what is a watt	aam.wl, cm.wl, dp.wl
the bird sat on the kerb with fur	cm.wl
caught in a knot	jh.wl, cm.wl, nm.wl
but he	nm.rp
thought occurred	aam.rp, cm.rp, nm.rp, dp.rp
quite amusing	awm.rp, cm.rp, nm.rp
but hoped	th.rp, awm.rp, cm.rp, nm.rp, dp.rp, as.rp
bought a	jh.rp, awm.rp, cm.rp, nm.rp
out of	cm.rp, dp.rp, cs.rp

Table 4.6: Instances of glottal stops at word boundaries

As in the D1, the glottal stop only occurs in word-final position. For three speakers (CM, NM, JH), the glottal stop and the tap are the only realisations of medial /t/, nearly in complementary distribution. There are no word-internal glottal stops. However, there are several instances of a word-final/pre-juncture tap. The other speakers producing glottal stops also have taps and voiceless alveolar stops word-finally with no discernible distributional pattern.

Before a vowel, syllabification and a universal tendency of Onset Maximisation would make a syllable coda /t/ ambisyllabic (Blevins 1995, 230-232). Tapping can only occur ambisyllabically. The closest rule to tapping ambisyllabically native SBrE speakers have is the glottalisation of /t/ in syllable codas (33)/(34). In order to acquire tapping, native SBrE speakers will probably have to draw on the glottalisation process and extend the governing environment to include a word-boundary followed by a syllable-onset, as well as develop a new surface representation. Tapping at juncture for native SBrE speakers indicates that the post-lexical version of tapping (31-b) has been incorporated into the interdialect, possibly by making generalisations about or manipulating the D1 glottalisation process.

In the instances of glottal stops listed in table 4.6, /t/ happens to be ambisyllabic, but it is still being derived from word-final position. It would be difficult to specify whether the glottal stops are derived from the D1 glottalisation rules (33)/(34) or if the glottal stops are derived from a D2-like rule similar to (31-b) but with a glottal stop output realisation.

In the word list and reading passage, there are a total of twenty-one word-internal /t/s and thirteen /t/s before a word boundary. Six participants show a strong tendency to have taps and glottal stops at word boundaries. Two participants, JP and DP, showed the opposite trend. They both had more taps word-internally than at juncture. Participant DP had two taps and four glottal stops at juncture, along with six alveolar stops. Word-internally, DP only produced taps. Participant JP, on the other hand, uttered three taps at juncture and nine alveolar stops. Word-internally, participant JP produced eleven taps and ten alveolar stops. Despite these

anomalous siblings who have more lenis forms, i.e. glottal or tap, word-internally than at juncture, we can see a tendency in interdialectal development for taps and glottals to appear at word boundaries more often than word-internally.

	___ # (13)	V ___ V (21)
th	5	0
awm	7	4
aam	5	2
cm	11	14
as	9	8
cs	5	5

Table 4.7: Taps at juncture compared to word-internally

Within a word, Onset Maximisation would assign an intervocalic, foot-internal /t/ to an onset. The speaker cannot apply glottalisation because /t/ is not in a coda. In order to use the native glottalisation rule as a template for the tapping rule in the interdialect, Coda Capture (22) has to be acquired or applied to ambisyllabic /t/.

Once Coda Capture is acquired and applied, the conditions for a tapping rule have been met. With /t/ now in syllable coda through Coda Capture, the D1 rule governing syllable-coda /t/ can be extended in the interdialect to include ambisyllabic /t/. Word boundaries still block Coda Capture, even from the onset of the {to-} morpheme, with one single exception of a tapped /t/ in *so together* (jh.rp). Word-internally, there still seems to be a prohibition on the glottal stop realisation of /t/. If a change in ambisyllabic /t/ occurs word-internally, an output other than the glottal stop must be chosen; in this case, the tap is chosen. Rather than having to acquire all of tapping, rule (31), those whose idiolects permit glottal stops need to acquire Coda Capture as well as the tap realisation in order to meet the appropriate conditions for tapping word-internally.

A tap uttered before a word boundary can be the substitution of one output realisation, the tap [ɾ] for another, the glottal stop [ʔ]. Since a rule governing /t/ already exists in this environment, a tap uttered before a word boundary can be the result of the substitution of one output realisation for another, like David's "l"s (see section 2.7.1) or the native GA speakers acquiring the glottal stop (see section 4.4.1, above). Alternatively, and more in line with a generative interpretation, a tapping rule probably like rule (31-b) probably applies before any glottalisation rules (33)/(34). Either explanation assumes that the tap is part of the phonic inventory. Some speakers may already have the tap as part of their D1 phonic inventory, since tapping is permissible in a limited context in SBrE. Speakers who tap are probably at

an advantage in acquiring the GA pattern for tapping, in that they already have part of the rule and the tap realisation itself.

Those SBrE speakers who do not tap natively must acquire the phonetic realisation of [ɾ] before it can be instated as an output to any interdialectal rule governing medial /t/. The 'control' subjects who maintain constant D1 SBrE performance produced a voiceless alveolar stop for /t/ medially. The stop had a closure of around 65ms with aspirated variants lasting up to 120ms. The native SBrE speakers who acquired the GA tap (JH, CM, NM, DP) produced the tapped /t/ with a duration of 25-35ms, which is not significantly longer than the average native GA 20-25ms. Two intermediate tokens were voiced or partially voiced alveolar stops: *metal and plaster*[143], 70ms (joh.wl) and *quite amusing*, 54ms (aam.rp). The duration for the stops in both utterances is too long to be considered a tap and not quite long enough to be a 'normal' stop.

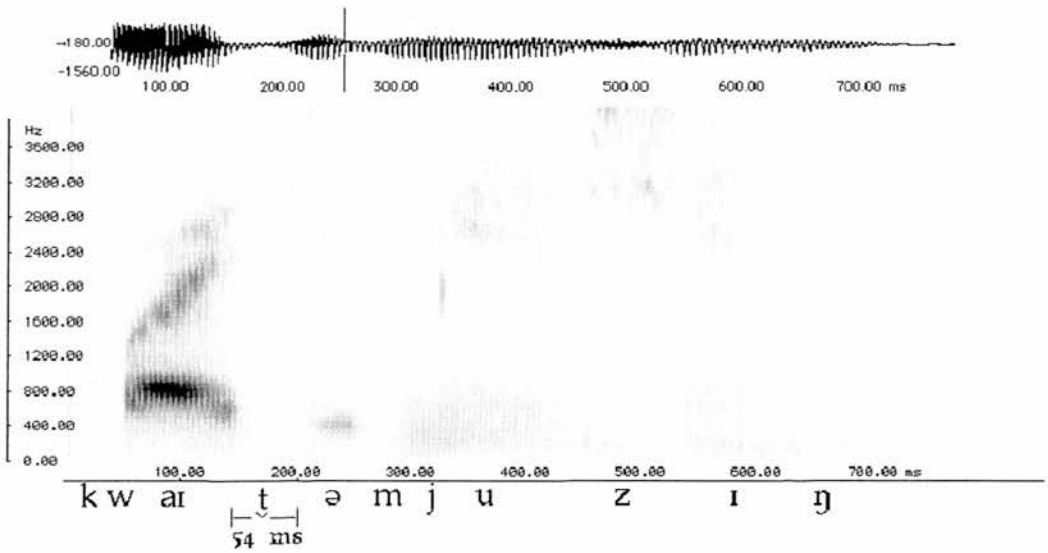

Figure 4.4: quite amusing (aam.rp)

The acquisition of a tap entails the acquisition of the component features of voicing and rapid articulation. Speakers TH and AAM showed little acquisition of the D2 tap (10.5% and 18.4%, respectively), suggesting that the ballistic nature of the tap needs to be acquired in addition to a rule governing /t/ in ambisyllabic position. Speaker JH shows no D1 utterances, except for glottal stops. The elongated voiced stop suggests that there is some sort of rule

[143] For tokens from the word list, the whole phrase is cited within the body of the text and in captions. Although the word *plaster* is irrelevant to tapping, it is part of a phrase that tests tapping, *metal and plaster* (see table 3.1)

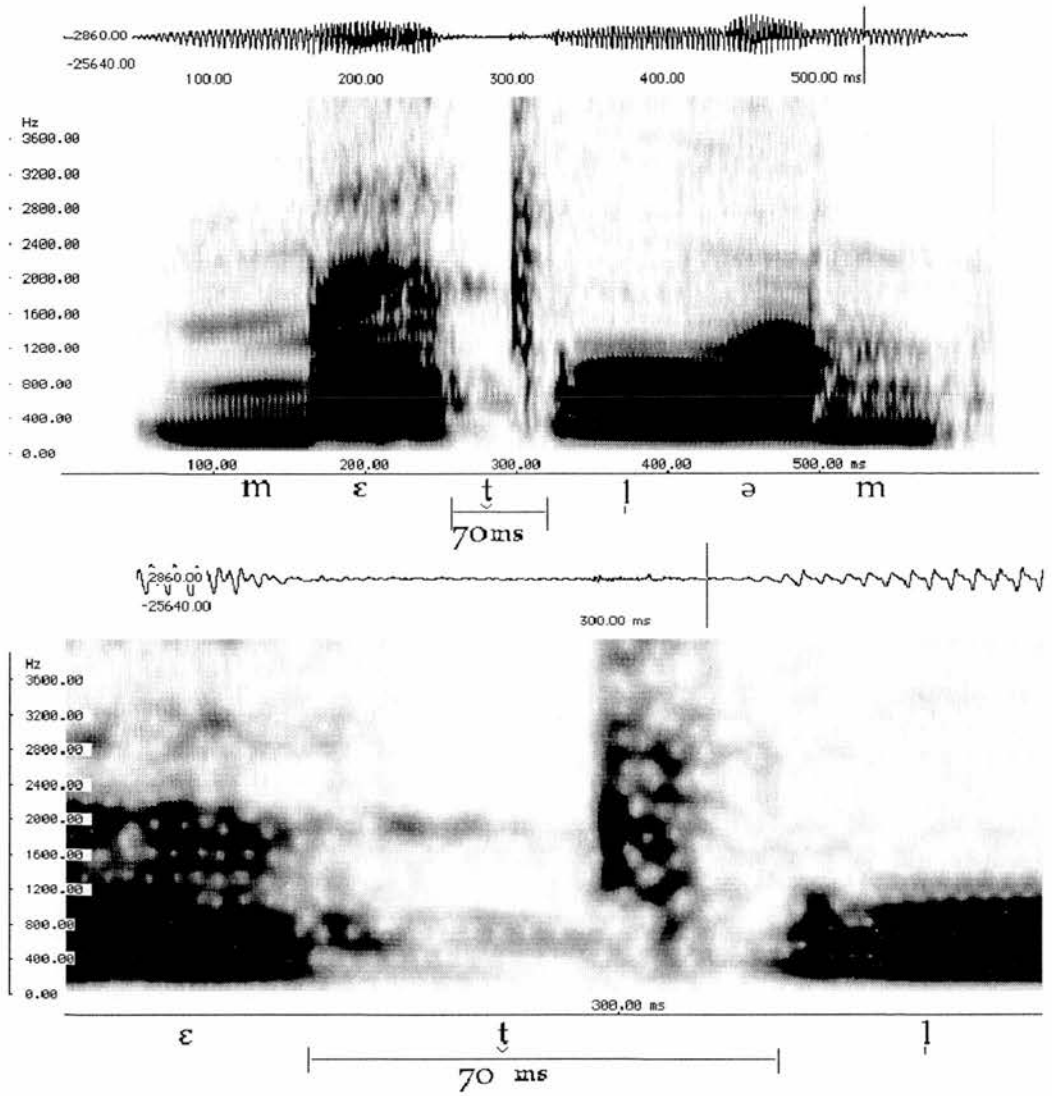

Figure 4.5: metal and plaster (joh.wl)

changing /t/ in the appropriate environment – probably an extension of the native glottalisation rule – but the ballistic nature of the tapped output of that rule has not fully been acquired yet.

So, in order to acquire tapping, the tap realisation must be acquired if it is not already in the idiolectal phonic inventory. A speaker must draw on the rule governing the glottal stop realisation of /t/, including the conditions concerning juncture. Even if a native SBrE speaker does not actively produce glottal stops, this speakers is probably aware that an intervocalic

glottal stop is 'wrong' or a less than standard pronunciation of intervocalic/t/ (Wells 1982, 324-325). As such, this speaker will have some sort of awareness of the glottalisation rule and will be able to draw upon it in order to generalise a tapping rule in the interdialect.

Although the glottalisation of intervocalic /t/ might provides a template for the acquisition of a tapping rule, the governing environment must be extended in the interdialect[144] in order to approximate D2-like tapping. For word-internal tapping, Coda Capture (22) must acquired and added to the existing rule governing the glottalisation of /t/. For tapping across word boundaries, the environment must be extended so that a vowel after juncture is specified, thus permitting Onset Maximisation (21). For native SBrE speakers acquiring GA, it is possible that the glottalisation process remains in the interdialect separate from the tapping process even after serving as a template for developing a tapping rule.

Participant	AA	D1	ID	D2	Percentage change	ID classification
AL	3.77	28	0	0	0	
DP	4.44	6	4	34	86.36	4 x [ʔ]
CM	5.04	7	8	30	84.44	8 x [ʔ]
JMP	6.65	19	0	26	57.78	
TL	6.67	43	0	0	0	
AAM	7.15	34	5	6	24.44	2 x [t], 1 x [d], 3 x [ʔ]
JH	7.33	1	3	42	97.82	1 x [t], 2 x [ʔ]
NM	8.35	2	6	37	95.56	6 x [ʔ]
TH	10.93	40	2	3	11.11	1 x [t], 1 x [ʔ]
AS	14.27	18	3	25	60.87	2 x [t], 1 x [ʔ]
CS	17.52	26	1	19	43.48	1 x [ʔ]
AWM	36.54	24	3	18	46.67	3 x [ʔ]

Table 4.8: Acquisition of medial /t/ for Britons in North America, glottals as interdialectal

Participant	AA	D1	ID	D2	Percentage change	ID classification
AL	3.77	28	0	0	0	
DP	4.44	10	0	34	77.27	
CM	5.04	15	0	30	66.67	
JMP	6.65	19	0	26	57.78	
TL	6.67	43	0	0	0	
AAM	7.15	36	3	6	20	2 x [t], 1 x [d]
JH	7.33	3	1	42	93.48	1 x [t]
NM	8.35	8	0	37	82.22	
TH	10.93	41	1	3	8.89	1 x [t]
AS	14.27	18	3	25	60.87	2 x [t], 1 x [ʔ]
CS	17.52	27	0	19	41.30	
AWM	36.54	24	3	18	46.67	3 x [ʔ]

Table 4.9: Acquisition of medial /t/ for Britons in North America, glottals as native dialect

[144] Not to mention the output realisation being acquired.

4.5 Comparison, Discussion and Conclusions

4.5.1 Statistical Comparison

The mean percentage of change[145] for the native GA speakers acquiring SBrE is 63.56%. The mean percentage of change for SBrE speakers was either 50.47% or 55.32%, depending on how glottal stops are counted. It was stated in sections 4.2.2 and 4.4.2 that a glottal stop can be a D1 realisation of /t/ in SBrE. Thus, the presence of a glottal stop could be considered a D1 utterance and a cause for not counting it as interdialectal change. Such an analysis yields a mean percentage of change in the acquisition of tapping of 50.47%.

On the other hand, bare glottal stops – as opposed to glottal stops co-articulated with /t/ – could be the output of an interdialectal rule approximating the target dialect, the acquisition of some form of change to /t/ in ambisyllabic position. The glottal stop could then be considered representing some sort interdialectal change for those acquiring GA, especially for those who do not produce complete glottal stops intervocalically in their native SBrE. Perhaps complete glottalisation is a preliminary attempt at tapping within the interdialect for some speakers[146]. None of the control participants – i.e. the adult speakers who demonstrated no change – produced any intervocalic glottal stops at all, suggesting the possibility that glottal stops represent some type of interdialectal development. Therefore treating the glottal stop as an interdialectal variant yields a mean percentage of change of 55.32%

Using the Mann-Whitney test for comparing non-parametric means, there was no significant difference between the native GA speakers targeting a voiceless [t] in ambisyllabic position – in other words, losing taping – or the native SBrE speakers acquiring tapping ($p = 0.474$, $U = 68.5$), regardless of how the glottal stops were counted.

4.5.2 Age

For the five oldest speakers, AS, CS, AWM, EMB and CC, the lowest degree of change was just over 40%. Clearly the critical period does not seem to prevent at least partial acquisition of medial /t/ by these older speakers.

Shockey (1984) shows that tapping is subject to long-term accommodation by older speakers. It is possible that the data for the older speakers shown in tables 4.10 and 4.11 is

[145] Change is simply defined as a non-D1 utterance that approaches the D2 to varying degrees of success. Change is shown by either a D2 or an intermediate response.

[146] Again, for those who do not normally produce intervocalic glottal stops in their D1.

Participant	Average
AF	20.45
NF	28.89
JEC	100.00
JNP	100.00
HS	36.36
ROP	97.67
MN	100.00
JAC	97.78
EB	18.60
LP	88.64
KN	97.78
ES	18.18
BB	4.55
EMB	76.19
CC	57.78
Average	62.86

Table 4.10: Interdialectal change of medial /t/ of Americans in England

Participant	Average (glottals as interdialectal)	Average (glottals as D1)
AL	0.00	0.00
DP	86.36	77.27
CM	84.44	66.67
JH	97.83	93.48
JMP	57.78	57.78
AAM	24.44	20.00
TL	0.00	0.00
NM	95.56	82.22
TH	11.11	8.89
AS	60.87	60.87
CS	43.48	41.30
AWM	46.67	46.67
Average	50.71	46.26

Table 4.11: Interdialectal change of medial /t/ of Britons in North America

a result of accommodation rather than acquisition[147]. The questions arises 'accommodation to whom?' The native-GA speaking interviewer was speaking in a mid-Atlantic interdialect. Even if the data represent accommodation, the accommodation is long-term and has affected the interdialectal phonology[148].

On average, the younger participants produced more D2-like and intermediate tokens than the older speakers. Roughly speaking, it seems that D2-like performance decreases as the age of arrival increases. However, age is not a major barrier in the acquisition of /t/. Perhaps such a low-level variable is subject to an older critical age than other types of phonological variables.

[147] It was argued in section 2.3 that accommodation or dialect convergence is more transient, varying from situation to situation, whereas acquisition is more permanent.

[148] Reminiscent of Chambers's "non-ephemeral acquisitions".

4.5.3 Conclusions

The acquisition of medial /t/ entails many processes. One of these processes is acquiring the actual articulation the D2 output phone. Both groups had to acquire components of which the target is comprised. This included the D2 binary setting of the feature [voice] as well as the ballistic or non-ballistic nature of D2 /t/.

Some native GA speakers acquired glottalisation at word boundary. This involves one surface representation being realised in place of another, possibly because the glottalisation process applies earlier in the phonological derivation than the tapping process. In these cases, a glottal stop rather than expected voiceless alveolar stop is realised instead of a tap. The native GA speakers who produce intervocalic glottal stops tend to do so across word boundaries from word-final position.

The native SBrE speakers acquiring GA share this glottalisation at juncture – that is, at word boundary. It is possible that the input and governing environment of rule (31-b) are the same in GA and SBrE and that a tap output is realised in GA and a glottal stop in SBrE. The SBrE speakers acquiring GA must manipulate the contexts of the glottalisation rules in order to permit a change in medial (t), in this case tapping, word-internally as well as at juncture. Some speakers have acquired (31-a), including the tap output, as an additional rule but have more or less maintained the SBrE version of (31-b), with a glottal output at juncture.

It is obvious that structures from the D1 are used and manipulated in the acquisition of D2 /t/. Native GA speakers maintain a rule with underlying /t/ being changed in ambisyllabic environment, but the new output is either a glottal stop or, at least in the early stages of interdialectal development, a voiceless alveolar stop [t][149]. Native SBrE speakers acquire a new rule for tapping or manipulate an existing rule governing medial /t/.

It was argued in section 2.6 that a phonological rule consists of input, output and the environment in which the input is transformed into the output. It is hypothesised that differences that appear only in the output of a phonological rule will have a higher degree of interdialectal change than differences in the contextual aspects of the rule. The native GA speakers only had to acquire a new output, [t] for [r]. For native SBrE speakers, there is a broader context in which /t/ can undergo change. They had to incorporate (31-a) to a (possibly) pre-existing (31-b)[150]: essentially the acquisition of Coda Capture and its application

[149]The voiceless alveolar stop [t] realisation might ultimately lead to the suppression of tapping or indicate that the tapping rule is variable in its application in the interdialect.

[150]Bearing in mind that the output of these rules in SBrE are not (necessarily) a tap, but could also be a glottal stop.

to word-internal /t/. Many of the control participants – the monodialectal speakers of SBrE – produced no glottal stops at all, indicating that, for some, the entire structure of medial /t/ tapping would need to be acquired.

In summary, the acquisition of /t/ confirms some of the hypothesis stated in chapter 2. First, with both groups of speakers, structures from the native dialect are manipulated as much as possible in acquiring a second dialect. With either one output being realised in lieu of another, or the expansion of the environment governing /t/ in the existing D1 rule, it can be seen that re-organisation and manipulation of existing structures is more likely to occur than introduction of entirely new structures. This chapter also showed that there were more instances of native GA speakers producing intermediate/D2 utterances than native SBrE speakers. This implies that differences only in surface representations are more liable to undergo more interdialectal change than differences involving the environmental aspects of a rule. Unfortunately, the statistics are not significant in showing the acquisition of voiceless [t][151] as having a higher degree of change than the acquisition of tapping or Coda Capture. Lastly, it can be seen that the interdialect is in between the native and target dialects. The interdialect for many speakers no longer matches that native dialect completely. At the same time, despite not matching the target entirely, the interdialect still functions as the D2.

[151] Or the suppression of tapping.

Chapter 5

The Low Vowels /æ/ and /ɑː/

5.1 Introduction

In SBrE and GA, the low font vowel /æ/ contrasts with the low back vowel /ɑː/, e.g *Sam* ~ *psalm*. However, there is a large group of words that has the /æ/ vowel in GA but the /ɑː/ vowel in SBrE. This group of words will be referred to as the BATH lexical set.

The difference between the two dialects with regard to the BATH vowel is lexical[152]. However, the difference can be expressed by a rule, outlined in (35) below. It will be argued that it is a rule that is acquired in the interdialect. It is suggested that the BATH vowel maintains its underlying D1 representation, even after 'complete' acquisition.

Acquiring the rule governing the D2 BATH vowel entails the complete fabrication of the rule from scratch. Unlike medial (t), there are no pre-existing structures other than the underlying representation to draw on. The incorporation of an entirely new rule into the interdialect is predicted to have a lower success rate than acquiring an output realisational difference, such as the phonology of medial /t/. However, the acquisition of a new rule is predicted to have a higher success rate than the acquisition of a new underlying representation or the merger of two underlying representations.

As an alternative to acquiring a new rule, it is possible that each item of the BATH set is acquired individually, that is, through lexical diffusion (Shockey, p.c.). Lexical differences like *jumper* ~ *sweater* or *tomato* must be acquired individually. There are no rules predicting the behaviour of these tokens. Lexical differences are generally unpredictable. The BATH vowel, though, entails more than just a few lexical items. It is a lexical set (as defined by Wells

[152] See section 2.6.3 for the definition of a lexical difference.

(1982)) with numerous members. Additionally, rule (35), discussed below, is a rule that can predict the difference in a large portion of the members of the BATH set. Rule (35) is a complex rule and does not wholly predict the differences. There are problems using this rule to predict lexical differences, which will be discussed below. Because of the rule and because of the large number of items affected by this lexical difference, the BATH vowel is treated as a rule-based difference in interdialect phonology.

5.2 Present-day Analysis

In a large portion of the words in the BATH set, the vowel is followed by a voiceless anterior fricative, e.g. *staff*, *path*, *pass*. Another environment in which the vowel of the BATH set is found is before nasals followed by a homorganic voiceless obstruent, e.g. *branch*, *dance*, *example*, *sample*. There are also a few words, such as *banana*, that belong to the BATH lexical set because the vowel varies in the same way as other members of the BATH set, even though the second vowel of *banana* is not in either of the two aforementioned environments, so *banana* will be acquired as an individual token.

Turning specifically to the BATH vowel in SBrE, before voiceless fricatives, [ɑ:] is found in *class* but [æ] is realised in *mass* ('substance, crowd'), and either vowel is found in ecclesiastical *mass*. There is a back [ɑ:] in *plaster*, but either a front or a back vowel in *plastic*. The differences in these vowels are due in part to the Old English or Latin origins (Labov 1994, 334). It is true that the Latinate origin of certain words affects phonological phenomena, in particular affixation. The morphology of affixation may have access to semantic information such as [± Latinate] – concepts that are not salient, let alone predictable, particularly to second dialect learners. Such unpredictability may lead to the members of the BATH set being acquired individually rather than as a group through a rule.

Before nasal-obstruent clusters, a back [ɑ:] is realised in bimorphemic *can't* but not in monomorphemic *cant*. In two-syllable *command* a back [ɑ:] surfaces, but a front [æ] is realised in monosyllabic *grand* (Labov 1994, 334). The number of morphemes or syllables may determine if [ɑ:] or [æ] is realised, but, as with the fricative environment, the morphophonemics of the nasal-obstruent clusters are not very transparent. Additionally, nasal-obstruent clusters and anterior fricatives do not form a natural class nor does there seem to be any other natural relationship between the two groups. Again, this suggests the possibility of acquiring the members of the BATH lexical set one by one.

However, a large portion of the BATH set is predictable, even if some of the finer details of the prediction are convoluted. Yet, there are a large number of exceptions and counter-examples, particularly in SBrE. Additionally, there are several other environments in which /ɑː/ is found in SBrE: before historic (r); before vocalised /l/; in many recent loan words. Furthermore, the vowel of the BATH set is the same as the vowel in the PALM and START sets in SBrE. This merger means that the back vowel /ɑː/ can occur in nearly any environment. In other words, [ɑː] is not a derived realisation of an underlying /æ/ in SBrE, but rather it is its own category that contrasts with /æ/, as is demonstrated in the minimal pair *Sam* ~ *psalm*.

In GA, the BATH set is realised with a front vowel [æ]. So, in GA, [æ] would be found in all of the example tokens listed for SBrE thus far, including the counter-examples. That is, both *plaster* and *plastic*, etc. are realised with [æ]. In GA, the vowel of the BATH set is the same as the vowel in the TRAP set. Like SBrE, the merger means that the front vowel /æ/ can be realised in nearly any environment

The different realisation of the BATH set between GA and SBrE is lexical. In a lexical difference, the two variants are not synchronically related. The two variants had a common antecedent but over a period of time, the underlying forms began to diverge. This divergence has led to the two different lexical representations. For the word *bath*, the underlying lexical representation in GA is /bæθ/ and in SBrE is /bɑːθ/. One of the underlying segments now differs between the two varieties, with the other segments that compose the word remaining unchanged. This does not mean that a lexical difference is also an underlying difference, as defined in 2.6.3 above. The difference between two lexical variants has no bearing on the underlying system of categories of either dialect.

The process of acquiring the BATH vowel is structurally comparable to the process of acquiring a split between underlying categories as in the THOUGHT ~ LOT vowels[153]. In the first dialect, the words represented by one vowel have to be split into two groups in the acquisition of the second dialect. The difference between acquiring the BATH vowel and the THOUGHT ~ LOT split is that for BATH, there is a pre-existing underlying category in both dialects to which the members of the lexical set can become associated. In acquiring the SBrE THOUGHT ~ LOT distinction by a native modified GA speaker, the dialect learner has to acquire a new underlying category, its realisation(s) and distinctive features, and its relation to the other members of the vowel system[154]. Additionally, in acquiring either of these two

[153] See the following chapter.

[154] This does not take into account that in acquiring the THOUGHT ~ LOT distinction, a further distinction needs to be made between LOT and PALM since these, too, are merged in modified GA.

phenomena, there are a large number of lexical items affected as compared to acquiring other lexical differences, such as *tomato* or *jumper/sweater*, where only one lexical item is entailed.

5.3 Historical Analysis

Unlike the lexical difference in the pronunciation of *tomato*, the lexical difference in the BATH set is comprised of a large group of words. Additionally, many of the words of the BATH set share a similar environment. Although it has been demonstrated that the difference in the vowel of BATH cannot be predicted withiin present-day varieties by a phonological rule, historically, there was a phonological rule that realised members of the BATH set with a long vowel in proto-SBrE.

The first stage of this sound change started some time towards the end of the seventeenth century with words from the BATH lexical set lengthening from [a] to [a:] (or from [æ] to [æ:]; see Dobson 1957, 545-548) before voiceless spirants and /r/, splitting from the TRAP lexical set (Dobson 1957, 525-526). It is important to note that the "lengthening was not uniformly carried through, and the old unlengthened vowel continued to exist beside the new lengthened one" (Dobson 1957, 526) throughout the eighteenth century. The lack of uniformity can be seen in the examples listed in the previous section as well as words like *gas, rant, pant, graph*, etc.

The BATH lexical set then had the same surface vowel as the PALM and START sets, [a:] and merged with them[155]. The vowels in these three sets then backed to [ɑ:] in the southeast of England, namely London and the Home Counties, yielding the modern SBrE realisation (Wells 1982, 232). Dobson suggests that the backing of [a:] to [ɑ:] in proto-SBrE occurred at approximately the same time as the lengthening from [a] to [a:] (Dobson 1957, 536). Dobson also suggests that while the lengthened reflex of short-a was a back vowel, the short realisation fronted to [æ] in open syllables.

In both SBrE and GA, /æ/ is the reflex of Middle English short-*a*. However, BATH lengthening did not affect proto-GA short-*a*. Not all American English accents were immune from BATH lengthening: many accents of New England English have a central or back BATH vowel, perhaps, due to continual contact with England during and after the colonial period.

[155] It is assumed that rhoticity was lost by this point so that [ar] became [a:] and merged with the [a:] of the BATH set. However, it is equally possible that rhoticity was lost at a later stage and the resultant [ɑ:] of START merged with the (previously) backed [ɑ:] of PALM/BATH.

5.4 Interdialect Analysis

Word List	Picture Cards	Reading Passage
metal and plaster	half (16)	long hot bath
laughing and dancing	plaster (36)*	middle of the path
Cuba and France	banana (20)	about to pass it
bubble bath		
the branch of a plant		
automatic transmission		
forty brass monkeys		
the prettiest girl in the class		

Table 5.1: Elicitation tokens for the BATH vowel

Given the nature of the picture cards, there are two potential lexemes for item 36: *plaster* or *band-aid*. The realisation of a front or a back vowel in *plaster* depends not only on the underlying idiolectal representation of *plaster*, but also on whether or not *plaster* itself is uttered.

It has been explained that the details of the BATH set are more complicated than can easily be encompassed in a single rule. However, a large portion of the words of the BATH lexical set is predictable. Using this predictability, the dialect learner might intuit a rule that changes the [back] value of the BATH vowel before voiceless anterior spirants and before a nasal followed by a voiceless obstruent.

$$(35)\quad \begin{bmatrix} - & \text{consonantal} \\ + & \text{low} \\ \alpha & \text{back} \end{bmatrix} \rightarrow [\ -\alpha\ \ \text{back}\ ] / \_\_\_\_\_ \left\{ \begin{bmatrix} + & \text{consonantal} \\ - & \text{sonorant} \\ + & \text{continuant} \\ - & \text{voice} \end{bmatrix} \right.$$
$$\left. \begin{bmatrix} + & \text{consonantal} \\ + & \text{sonorant} \\ + & \text{nasal} \end{bmatrix} \begin{bmatrix} + & \text{consonantal} \\ - & \text{sonorant} \\ - & \text{voice} \end{bmatrix} \right\}$$

The alpha notation is used here to indicate that the rule can be targeted by GA speakers acquiring SBrE or SBrE speakers acquiring GA. The alpha is used to demonstrate a similar rule used by dialect learners from both groups examined in this thesis. The alpha is, in this case, fixed for each group: for native GA speakers acquiring SBrE, alpha has a negative value so [æ] goes to [ɑ:] in interdialectal development; for native SBrE speakers acquiring GA, alpha has a positive value, so [ɑ:] goes to [æ]. Chambers presents a rule similar to (35) from the perspective of a GA first dialect. SBrE speakers acquiring GA can use the same rule that Chambers posits, except that the input and output are reversed. Hence, in SBrE, the back vowel [ɑ:] would become [– back] in the appropriate environments.

For speakers with SBrE as their D1 and who are acquiring GA, rule (35) is more plausible than a GA speaker acquiring SBrE. The /ɑ:/ of the BATH set in SBrE is always /æ/ in GA. There are no (known) (monosyllabic) exceptions. Therefore, the exceptions found in SBrE – such as *cant*, *mass* and the numerous other examples that have been mentioned thus far – would not have to be learned in acquiring GA and there is less likelihood of over-generalisation.

However, the conditioning environments are not readily related to each other. This means that either the American participants in London or the English participants in North America could potentially acquire the D2 BATH vowel in only one of the two environments. Also, it is possible for either group to over-generalise rule (35) by acquiring rule (36).

(36) $$\begin{bmatrix} - & \text{consonantal} \\ + & \text{low} \\ \alpha & \text{back} \end{bmatrix} \rightarrow [\ -\alpha \quad \text{back}\ ]$$

The notation of [+ back] or [– back] suggests a binary feature. This, in turn, implies that for any token of the BATH set, either a front [æ] or a back [ɑ:] is realised. The phonology may be binary, but the phonetics may operate on a continuum, suggesting a third possible realisation for the BATH vowel: a central [a]. The BATH vowel, rather than being the front or back extremes of the low vowels, could then be realised as a continuum of low vowels, ranging from [æ] to [ɑ:].

Using a spectrogram, the second formant reflects the backness of the vowel. A high frequency for the second formant is evidence of a front vowel. Conversely, a low F2 frequency suggests a back vowel. The average formant values for the /æ/ and /ɑ:/ vowels are very similar in GA and SBrE.

	/æ/	/ɑ:/
F1	690 Hz	710 Hz
F2	1660 Hz	1100 Hz
F3	2490 Hz	2540 Hz

Table 5.2: Average formant values for GA /æ/ and /ɑ:/ (Olive, Greenwood and Coleman 1993, 104; Ladefoged 1993, 193)

In table 5.2, the average values of F1 and F3 are very similar. The main difference between the two vowels is in the value of the second formant. The same is also true in SBrE.

male	/æ/	/ɑ:/	female	/æ/	/ɑ:/
F1	732 Hz	687 Hz	F1	1101 Hz	779 Hz
F2	1527 Hz	1077 Hz	F2	1759 Hz	1181 Hz

Table 5.3: Average formant values for SBrE /æ/ and /ɑ:/ (Cruttenden 1994a, 96)

If a participant produces an intermediate vowel between /æ/ and /ɑː/, its F2 value will also be between the F2 value of /æ/ and /ɑː/. Since most of the participants whose idiolects are examined are children, the average values for all formants will higher than the averages listed in tables 5.2 and 5.3. So the F2 of /æ/ for each participant is taken from words like *anarchy*, *automatic*, *Daniel*, *planet* and the F2 of /ɑː/ is taken from members of the LOT set, such as *cot*, *nod*, *don*, *jolly*, *hot*, *bottle* (see chapter 6 on the THOUGHT and LOT vowels). Unfortunately, all instances of SBrE /ɑː/ except *tomato* are from the BATH set, and thus liable to change. Even though the LOT vowel represents /ɒ/ in SBrE, the F2 value is an approximation of what the F2 of the /ɑː/ vowel would be for a given speaker, since they are both low, back vowels. This is clearly not the ideal way to obtain the F2 value of the BATH vowel, but the data will show that using the F2 value of the LOT vowel as an approximation of the D1 F2 value of the BATH provides a sufficient reference point.

Returning briefly to the discussion of the intermediate vowel, Chambers refers to such a vowel as a 'fudge'. A 'fudge' is a realisation that is between the articulation of the D1 realisation and the articulation of the D2 realisation. It is not found in either dialect. This is the very nature of interlanguage and interdialect, and the major focus of this thesis. The following sections show how a 'fudge' can illuminate the role of interdialect phonology in second dialect acquisition.

5.4.1 Americans in Britain

There were four participants who showed no change towards the D2 for this phenomenon. For almost all tokens of the BATH vowel, a front [æ] was produced by participants AF, HS, ROP and LP. For participant LP, this is odd: LP has acquired non-rhoticity, which is considered significantly more difficult to acquire than the BATH vowel (see chapter 7 on rhoticity). Yet, LP produces only front vowels for members of the BATH set. Both D2 phonological phenomena subjectively seem fairly salient from a monodialectal perspective, so there would seem to be no sociolinguistic reason why non-rhoticity is acquired before the BATH vowel. There is no feasible explanation for LP's use of BATH and (r).

There were another four participants who have acquired non-front vowels for the BATH set. Nonetheless, the realisation of this vowel is not a back [ɑː], either. Instead, these participants have acquired a central [a] vowel for the BATH set.

As is expected, the /ɑː/ and /æ/ vowels themselves are phonetically distinct from each other. Nevertheless, the BATH vowel bridges the gap between the two vowels. The distance between

	F2 range of /æ/	F2 range of /ɑ:/	F2 range of BATH vowel
BB	2000 Hz	1100-1200 Hz	1450-1800 Hz
EB	2000-2300 Hz	1280-1350 Hz	1500-1780 Hz
KN	2000-2200 Hz	1400-1500 Hz	1500-1800 Hz
ES	1750-1930 Hz	1100-1200 Hz	1500-1800 Hz
CC	2000-2200 Hz	1150 Hz	1400-1800 Hz

Table 5.4: Ranges of F2 values between /æ/ and /ɑ:/ for some GA speakers acquiring SBrE

the BATH vowel and one or both of the other vowels is not necessarily great. For example, the back-most extreme (lowest frequency) of KN's BATH vowel borders the front-most extreme (highest frequency) of /ɑ:/. The BATH vowel might be an extension of the acoustic vowel space of /ɑ:/ and might be phonologically conditioned. Looking at ES's BATH vowel, there is even some overlap with one of the other vowels, this time the front /æ/. For some of these speakers, the vowel of the BATH set is neither /æ/ or /ɑ:/, but an extension of the acoustic space of either vowel or a range of acoustic space that is independent of and in between these two low vowels that form the extremes on the [low] continuum: the front short /æ/ and the long back /ɑ:/.

Participant BB produces no low vowels in the range of 1600-1750 Hz. Additionally, there is no F2 overlap between BB's BATH vowel and either of the other two vowels. The lack of overlap or proximity with the other vowels suggests that the BATH vowel is a realisation of neither /æ/ nor /ɑ:/. It can also be argued that the BATH vowel belongs to both of the other vowels and that the acoustic space for both /æ/ and /ɑ:/ is expanding to accommodate BATH yet still keeping distance from each other in order to maintain a category boundary.

Participant CC also keeps the /æ/, /ɑ:/ and the BATH vowel distinct. On two occasions, she demonstrates metalinguistic awareness of the status of the BATH vowel. In the phrase *bubble bath*, CC utters [baθ], then corrects herself to [bɑ:θ]. Also, at the end of the reading passage, CC asks "did I say [pɑ:s] or [pæ̰s]?" In fact, CC uttered [pa:s], which is neither of the choices she presents. It is interesting that CC keeps the BATH vowel distinct from either /æ/ or /ɑ:/. Phonetically, the BATH vowel does not reach the D2 target pronunciation. Phonologically, however, CC's vowel system is D2-like. In her D1, CC makes the *cot* ~ *caught* distinction. She even utters an SBrE-like pronunciation of /ɔ:/ for some tokens. In SBrE, the *cot* ~ *caught* vowels, as well as the low front /æ/ are distinct from the BATH vowel. CC has acquired these multiple distinctions of THOUGHT-LOT-BATH-TRAP, even though her native LOT vowel is the phonetic target for BATH. The underlying status of BATH is questionable. CC was thirty-two years old when she arrived in England, making the acquisition of new underlying categories highly unlikely. It is more probable that there has been a lexical split through the acquisition of rule (35).

The fact that the BATH vowel for CC and for the others is not realised as [æ] demonstrates that these speakers have acquired a rule that distinguishes the /æ/ of the BATH set from the /æ/ of the TRAP set. While an item-by-item acquisition is possible, more inconsistency would be expected. The realisation of the BATH vowel itself is often inconsistent, but the realisation *is* consistent in that it is neither /æ/ nor /ɑː/. The different realisation of the BATH vowel is technically due to a lexical difference between SBrE and GA. However, the consistency of the central [a] realisation strongly suggests rule government in the interdialect.

The environments of rule (35) seem unrelated. Thus, it is possible that the D2 BATH vowel would be acquired in either environment, but not necessarily both. Four participants – NF, KN, JP and ES – produced more intermediate or D2 forms in the environment before a nasal-obstruent cluster. Yet, this is only a general tendency with no clear pattern. One datum from KN is a counter-example to this tendency: in reading *laughing and dancing*, KN produces a mixed [l̪afɪŋg ən dæntsɪŋ].

Three of these four participants are included amongst those that consistently produce a central [a] for BATH. The fourth participant, NF, fluctuates between front and central realisations. It would appear that NF is in the early process of acquiring rule (35), probably acquiring the BATH variable item-by-item.

Along with acquiring the mechanisms that changes the realisation of /æ/ for the BATH set, the back vowel [ɑː] also has to be acquired as a realisation of BATH. In other words, the BATH vowel has to become unassociated with [æ] *and* associated with [ɑː][156]. There were four participants who not only distinguish BATH from TRAP, but also realised BATH with a back [ɑː]. Three of these participants – MN JAC and JEC – were six years old or younger when they came to England. Clearly a young age of arrival aids in the acquisition of the D2 BATH vowel. However, participant EMB from the pilot study also acquired a back BATH vowel, but arrived in the UK at the age of eighteen. Data from EMB and CC suggest that the acquisition of the BATH vowel is not constrained by the 'critical age'[157].

5.4.2 Britons in North America

Three native speakers of SBrE maintained a back [ɑː] for BATH: TH, TL and AS. Participant TH is generally conservative with respect to all of the phonological phenomena examined in this thesis. Participant TL was imitating his father, whom he heard participating in the experiment

[156]Though not necessarily both.

[157]Participants CC's husband also produced one token of a back vowel in the word path in the reading passage, further supporting that age does not necessarily inhibit the use of a D2-like bath vowel.

Participant	AA	D1	ID	D2	Percentage change	ID classification
AF	0	14	0	0	0	
NF	1	9	4	0	30.77	4 x [a]
JEC	2.97	0	1	11	100	1 x [a]
JNP	3.06	9	4	0	30.77	4 x [a]
HS	4.49	12	0	0	0	
ROP	4.72	14	0	0	0	
MN	5.32	0	2	13	100	1 x [a], 1 x false start
JAC	6.01	0	1	14	100	1 x [a]
EB	6.45	8	6	1	46.67	6 x [a]
LP	6.57	11	3	0	21.43	3 x [a]
KN	6.83	6	8	1	60	7 x [a], 1 x false start
ES	8.26	8	7	0	46.67	6 x [a], 1 x false start
BB	8.32	7	8	0	53.33	8 x [a]
EMB	18.21	2	1	11	85.71	4 x [a]
CC	31.89	2	11	2	86.67	11 x [a]

Table 5.5: Acquisition of the BATH vowel by Americans in England

himself prior to TL's own recording. TL's parents report that TL generally produces a front [æ] in words like *bath* and *pass* and refers to the material for covering small wounds as a *band-aid* with a front [æ] and not a *plaster* with a back [ɑː], which is what he recorded. Participant AS has shown changes towards acquiring rhoticity and tapping, so a front [æ] in only one token, *dancing*, is a bit surprising. Perhaps AS is acquiring the BATH vowel item-by-item. In comparison to participant LP, it is possible that (non-)rhoticity is not much more difficult to acquire than the BATH vowel[158].

Participant CS produced only a few tokens of non-back vowels, two of which were in the phrase *laughing and dancing*. The value of the second formant of CS's /æ/ is in the range of 1700-1800 Hz. CS's pronunciation of *dancing* had an F2 of 1600 Hz, close to [æ]. CS pronounced *laughing* with an F2 of 1450 Hz, a central [a]. The remainder of the BATH vowels were pronounced with F2 values ranging from 1100 to 1300 Hz. Judging from CS's LOT vowel, the F2 value of /ɑː/ would be around 1000 to 1100 Hz. Most of CS's BATH vowels are outside the /ɑː/ range. The range of the BATH vowel can be seen as an extension of the native /ɑː/ category. In other words, the acoustic space of /ɑː/ is expanding to accommodate the D2-target BATH vowel. It is possible in that in CS's idiolect, the BATH vowel and the PALM vowel are two realisations of an underlying /ɑː/, and acoustically, the two realisations are similar although not identical. Even with the expansion of the /ɑː/ category, there is still a significant gap between /æ/ and /ɑː/.

[158] See chapter 7.

	F2 range of /æ/	F2 range of /ɑː/	F2 range of BATH vowel
CS	1700-1800 Hz	1100 Hz	1100-1300 Hz
AAM	2000-2300 Hz	1200 Hz	1500-1970 Hz
JAP	1900 Hz	1100-1200 Hz	1300-1800 Hz
DP	2000-2200 Hz	1350 Hz	1800-2000 Hz

Table 5.6: Ranges of F2 values between /æ/ and /ɑː/ for some native SBrE speakers acquiring GA

A similar gap between /æ/ and /ɑː/ is seen in AAM's and DP's idiolects, except that it is the /æ/ category that is expanded. The second formant of DP's BATH vowel ranges from 1800-2000 Hz. Likewise, AAM produces BATH vowel whose F2 ranges from 1500 Hz to about 2000 Hz. These both appear to be an expansion of the acoustic space of /æ/. DP still maintains a significant distance between /æ/ and /ɑː/. However, the gap between the two low vowels is much closer in AAM's idiolect. The /æ/, /ɑː/ and BATH vowels almost form a continuum.

Such a continuum can be seen in JAP's low vowels. The range of the BATH vowel closely borders both /æ/ and /ɑː/. This continuum is similar to the BATH vowel of some of the Americans in Britain such as EB, BB and CC. However, for the Americans, the BATH vowel constitutes its own category. There are small yet sufficient gaps in the F2 values between BATH and /æ/ as well as between BATH and /ɑː/. For JAP, there are no gaps. Where the acoustic space of one vowel ends and another begins is difficult to determine. Perhaps this is an expansion of both /æ/ and /ɑː/ to accommodate the changing value of BATH. Clearly JAP has acquired a rule affecting a low vowel before voiceless fricatives and before a nasal stop followed by an obstruent.

On the other hand, DP has acquired the rule for fronting the BATH vowel, but he has not yet acquired the output of that rule. Participant CS's data show that the D1 category of the BATH vowel (/ɑː/) expands as the rule is acquired. Participant JAP's data show that the D2 category of the BATH vowel expands along with the D1 vowel until there is no discrete boundary between the vowels. DP and AAM have expanded D2 categories of the BATH vowel (/æ/). This suggests a gradual migration from the D1 vowel to the D2 vowel of the BATH lexical set.

Like these four participants, participant JH also consistently distinguishes the BATH vowel from /ɑː/. JH produces no D1-like realisations for BATH, and the majority of his BATH utterances are a target-like, front vowel [æ]. Participants CM and NM consistently produce only a front [æ] vowel for BATH.

All of these data assumes that rule (35) has been acquired, even if the output is underspecified. Rather, the governing environments of rule (35) have been associated with /ɑː/. There does not seem to be any overgeneralisation fronting all /ɑː/ towards /æ/. The expanding

acoustic vowel spaces only account for the BATH set: the native /æ/ and /ɑː/ seem to maintain their relative D1 values.

Even though the environments governing /ɑː/ for the BATH set have been acquired, it is possible that one of the two environments shows more interdialectal change than the other. The data indicate, though, that the two disparate environments do not seem to be treated differently. However, there are some interesting data with respect to the two conditions.

Participant AAM maintains a fully back D1 [ɑː] for BATH only before voiceless fricatives. This does not mean that before a nasal followed by a stop or a fricative is the first or only environment in which the BATH vowel undergoes change. If AAM is to produce a back [ɑː] for BATH it would probably only occur before a voiceless spirant, although a non-back vowel is equally likely in this environment.

DP has a similar pattern. The only back vowels for BATH are produced before voiceless fricatives. DP utters roughly the same number of front vowels as back vowels before fricatives. In the environment before a nasal preceding an obstruent, DP produces only non-back vowels. It is possible that phonological processes do not wholly govern this pattern and the members of the BATH lexical set are acquired individually. In the picture cards and the reading passage, BATH only occurs before voiceless anterior fricatives. Participant DP only produces back vowels for tokens from the picture cards and the reading passage. In the first task – the word list – DP produces mostly intermediate or D2 responses. There is also an even mixture of the two phonological environments in this particular task. Perhaps DP's use of non-D1 forms is governed by the phonology or perhaps it is governed by the degree of formality of the elicitation task. There is no way to be certain.

Participant AL shows a converse pattern to AAM and DP with respect to phonological environment. A D2 front vowel [æ] for BATH will only likely occur before a nasal-obstruent cluster. However, a native back vowel is also probable in this environment[159]. These three participants – AAM, DP and AL – are the only ones that show any sort of pattern with respect to the two separate environments governing the D2 realisation of the BATH lexical set.

[159] AL is excluded from most of the discussion because he did not complete the three tasks and because he was aided by his mother during the tasks. Despite the maternal influence, his usage of [ɑː] and [æ] deserve mention.

Participant	AA	D1	ID	D2	Percentage change	ID classification
AL	3.77	6	1	3	40	1 x [a]
DP	4.44	5	1	7	61.54	1 x [a]
CM	5.04	0	0	11	100	
JMP	6.65	0	2	11	100	2 x [a]
TL	6.67	14	0	0	0	
AAM	7.15	2	4	8	85.71	4 x [a]
JH	7.33	0	4	9	100	4 x [a]
NM	8.35	0	0	14	100	
TH	10.93	13	1	0	7.14	1 x [a]
AS	14.27	13	0	1	7.14	
CS	17.52	10	3	0	23.08	3 x [a]
AWM	36.54	0	9	6	100	9 x [a]

Table 5.7: Acquisition of the BATH vowel by Britons in North America

5.5 Comparison, Discussion and Conclusion

5.5.1 Statistical Comparison

5.5.1.1 Comparison Between Groups

Participant	Percentage change
AF	30.77
NF	0
JEC	100
JNP	30.77
HS	0
ROP	0
MN	100
JAC	100
EB	46.67
LP	21.43
KN	60
ES	46.67
BB	53.33
EMB	85.71
CC	86.67
Average	50.80

Table 5.8: Average change of the BATH Americans in Britain

Using the Mann-Whitney test for comparing non-parametric means, there is no significant statistical difference ($p = 0.192$, $U = 67.5$) between the native GA speakers acquiring rule (35) and the native SBrE speakers acquiring (35). It is clear that native GA speakers are targeting [ɑː] and native SBrE speakers are targeting [æ]. Even though the overt targets are different, both groups of speakers are in the process of acquiring the same rule, (35), with alpha set

according to the native dialect. It is the the success of acquisition of the sociolinguistic variable illustrated by rule (35) that is being compared.

Participant	Percentage change
AL	40
DP	61.54
CM	100
JMP	100
TL	0
AAM	85.71
JH	100
NM	100
TH	7.14
AS	7.14
CS	23.08
AWM	100
Average	60.38

Table 5.9: Average change of the BATH Britons in North America

5.5.1.2 BATH Compared to Medial /t/

There were seven native GA speakers who showed more change in acquiring the SBrE value of (t) than the BATH vowel and six who showed more change in acquiring the BATH vowel than acquiring (t). There were also two participants (JEC, NM) who fully acquired both variables. Using a Wilcoxan test to compare the acquisition of /t/ to the BATH vowel by native GA speakers, however, showed no statistical significance between the two variables ($p = 0.211$, $Z = -0.804$). There is a similar pattern in comparing the acquisition of /t/ and BATH by native SBrE speakers. Five native SBrE speakers demonstrated more change in /t/ than in BATH and four demonstrated more change in BATH than /t/. One participant (JOH) acquired both variables and another participant (TL) demonstrated no change at all in either variable. Using a Wilcoxan test to compare the acquisition of /t/ to the BATH vowel also showed no statistical significance between the two variables ($p = 0.339$, $Z = -0.415$).

5.5.2 Age

There were several older speakers – namely participants CC, EMB and CS – who demonstrated noticeable change towards the second dialect realisation of the BATH vowel. The difference between the GA and SBrE realisations of the BATH vowel is classified, in terms of second dialect acquisition, as a rule-governed difference. It is possible that age holds little inhibiting force to the acquisition of rule-governed differences and realisational differences like (t).

5.5.3 Conclusions

It seems probable from both sets of data that the acquisition of the second dialect vowel of the BATH lexical set is a rule-governed process. For those that show change towards the D2, there seems to be no significant preference for either of the two conditioning environments, although there is a greater tendency for the BATH vowel to show more change in the environment of a nasal-obstruent cluster.

More importantly, the targeted rule – which probably closely resembles rule (35)[160] – clearly distinguishes the BATH lexical set from other lexical sets that share the same D1 vowel as the BATH set. Some speakers treat the BATH phone as an acoustically similar realisation to the D1 underlying representation. For others, the BATH vowel is neither the D1 nor the D2 value. For JAP, realisations of the BATH vowel cover *both* the D1 and D2 vowels. Towards the final stages of complete D2-like acquisition, the BATH vowel may become an acoustically similar realisation to the D2 underlyer. It is possible that the new realisation has become associated with the D2 underlying representation rather than remaining associated with the D1 underlyer.

There has been diverse variation in the realisation of the BATH vowel. Yet there is also awareness that it is only the BATH lexical set that is affected, not members of the TRAP or PALM lexical sets.

The members of the BATH lexical are represented by a different underlying vowel in each dialect. However, both dialects have [ɑ:] and [æ] as surface realisations as well as underlying representations. The underlying categories and series of contrasts do not differ. Instead, the lexical representation of a series of words differ.

Despite the different lexical representation of the BATH vowel, the difference is acquired as a rule. Because the rule does not affect the underlying system of sounds in the interdialect, the acquisition of the rule equates to the acquisition of a contextual difference, as defined in section 2.6.2.

In comparing the acquisition of medial /t/ to the acquisition of the BATH vowel by the same group of speakers, it was expected that native GA speakers would demonstrate more change in acquiring a voiceless ambisyllabic [t] than the BATH vowel because, as proposed in section 2.6.2, contextual differences may act differently from output realisational differences[161]. The

[160] Bearing in mind that alpha is defined as [– back] for native SBrE speakers acquiring GA and [+ back] for native GA speakers acquiring SBrE.

[161] Because acquiring a voiceless [t] medially is equivalent as suppressing tapping for native GA speakers acquiring tapping, it could also be argued, as it is in Chambers (1992) that losing a rule results in more interdialectal change than acquiring a new rule like the BATH vowel.

fact that the BATH vowel is a lexical difference means that it is possible that modifying the lexical representation of BATH members occurs item-by-item. The one-by-one approach of lexical diffusion may be a slower interdialectal process than acquiring a clearly rule-governed differences like medial (t).

Because both tapping and the BATH are acquired as contextual differences for native SBrE speakers, no appreciable differences were expected in the amount of change in the acquisition of tapping compared to the amount of change in acquiring a front [æ] for the BATH set. Indeed, the statistically insignificant difference supports the notion that, in terms of the amount of change, there is no difference between the BATH and /t/ for native SBrE speakers. However, there is no statistical significance in the acquisition of /t/ compared to the BATH vowel for native GA speakers, either. Because one difference is contextual and the other is realisational, a statistically significant difference in the amount of change was expected. In terms of statistical significance, there appears to be no difference in the amount of interdialectal change of a output realisational difference, /t/, compared to the amount of interdialectal change of a contextual, rule-based difference[162]. Instead, the statistics suggest that both types of difference progress at approximately the same rate in interdialectal development.

[162]Or lexical difference.

Chapter 6

The Low, Back Vowels /ɔː/ (THOUGHT) and /ɑː ~ ɒ/ (LOT)

6.1 Introduction

In both Southern British English and General American, a distinction is made between the vowels represented by the THOUGHT and LOT lexical sets. In both varieties, the THOUGHT lexical set corresponds to the long, low, back, rounded vowel /ɔː/. The LOT vowel also corresponds to a low, back vowel in both dialects: in SBrE, the LOT vowel corresponds to a low, back, short, unrounded vowel /ɒ/; in GA, the LOT vowels corresponds to a low, back, long, unrounded vowel /ɑː/.

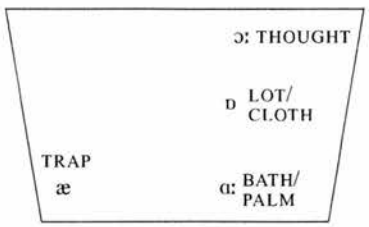

Figure 6.1: SBrE Low, Back Vowels

In SBrE, the short rounded vowel /ɒ/ also corresponds to the CLOTH lexical set as well as LOT[163]. The long, unrounded /ɑː/ vowel in SBrE represents the PALM and BATH lexical sets as

[163]The CLOTH set is discussed shortly.

Figure 6.2: Standard and Modified GA Low, Back Vowels

well as THOUGHT. The long, unrounded /ɑ:/ vowel in GA, on the other hand, represents the PALM lexical set in addition to the LOT set.

In second dialect acquisition between SBrE and GA, there is potentially a lot of activity in the low, back quadrant of the the vowel trapezium. This activity also affects the BATH vowel[164]. It was argued in the previous chapter that the BATH vowel is quite possibly governed by a rule in interdialectal development. The phonological conditioning of the rule in the interdialect isolates members of the BATH set from the activity affecting the THOUGHT and LOT lexical sets.

Even though the vowels in the LOT and THOUGHT sets correspond to one other in the respective dialects, the vowel of the CLOTH lexical set corresponds to THOUGHT set in GA, but to the LOT set in SBrE. For the remainder of the discussion, the CLOTH set will be ignored. There was only one word in the field devices that possibly belongs to the CLOTH set: *long* (Jones 1997, 297). The remainder of the tokens belongs either to the THOUGHT set for GA and SBrE or the LOT set for both dialects.

Since the LOT vowel refers to two different vowels – /ɒ/ in SBrE and /ɑ:/ in GA – the following discussion of the THOUGHT ~ LOT merger or distinction will make extensive use of Wells's lexical sets. The main point behind the use of lexical sets is to refer to "a large number of words which behave the same way in respect of the incidence of vowels in different accents" (Wells 1982, 120). This was exemplified in the previous chapter: the BATH vowel is front [æ] in GA but back [ɑ:] in SBrE.

In the discussions about interdialects, the LOT vowel will refer to a vowel distinct from the THOUGHT vowel /ɔ:/. The THOUGHT and LOT vowels also might not be contrastive, which

[164] Discussed in the previous chapter.

shall be noted as necessary. The THOUGHT and LOT vowels will casually be referred to as the *caught* ~ *cot* vowel(s)[165].

The difference between the varieties that distinguish the *caught* ~ *cot* vowels and those that do not is clearly a difference at the underlying level. The underlying phonological categories of the two groups differ.

The acquisition of a realisational difference uses existing D1 phonological structures. The acquisition of a new realisation, such as was seen in acquiring medial /t/, does not change the underlying representation nor the phonological environment in which the underlying representation is transformed into the new output[166]. Even the acquisition of a new rule, such as was seen with the BATH vowel, still uses an existing D1 underlyer. In these two types of difference, the input – that is, the underlying representation – remains unchanged. Acquiring a new category creates a difference in the underlying from, altering the nature of the input.

Underlying categories form systematic relationships with one another. In many languages, for example, voiced obstruents have voiceless counterparts. It has been implied already that English vowels form long-short/tense-lax relationships. Change to the underlying inventory of categories disrupts these systematic relationships.

Acquiring a new contrast is much like acquiring a lexical difference, such as acquiring the BATH vowel. Both types of difference are concerned with the association of a large group of words with a different underlying representation. The different realisation of the vowel of the BATH lexical set occurs in predictable environments (see the previous chapter). Additionally, the target of the rule changing the BATH vowel exists in the D1. There are no phonological rules that can determine if a THOUGHT vowel or a LOT vowel should be realised for a given token.

In acquiring the *caught* ~ *cot* distinction, there is no D1 target to which to associate one of the lexical sets. The new vowel does not occur in any predictable environment, as the minimal pair *caught* ~ *cot* demonstrates. The acquisition of the distinction introduces a new element into the system of underlying categories. The systematic relationships of the native categories have to readjust when incorporating the new element.

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[165] The words *caught* and *cot* form a simple diagnostic determining whether or not a speaker distinguishes between the THOUGHT and LOT vowels. Although the discussion is about the THOUGHT and LOT lexical sets, by referring to *caught* ~ *cot*, it is slightly more obvious that the discussion is about a merger or a distinction.

[166] For some speakers, anyway.

In acquiring the *caught* ~ *cot* merger, there is possibly an existing D1 target: one of the two distinct vowels[167]. The merger of two categories can lead to homonymic/homophonic clash and ambiguity. The merger of the two vowels neutralises the long-short relationship that was shared in the D1. Although the target might exist, new relationships and associations still need to be acquired. Phonologically, the merged vowel in the interdialect may eventually match the modified GA pattern [168], but the physical realisation of the vowel also has to change, since the target is neither [ɔː] nor [ɒ].

Acquiring a new contrast, either a distinction or a merger, entails a disruption in the systematic relationships of the existing D1 system. Additionally, the correct values of the distinctive features of the output – that is, the articulation – need to be acquired.

In this thesis, categorical differences are the most abstract. Changes to one underlying representation may have a knock-on effect on other underlyers, for example, the Great Vowel Shift or the loss of rhoticity (see the following chapter). There is no existing D1 underlying representation to work around: the underlying representation itself and its relationship to other underlyers must change; nor are there any other D1 structures or rules that can readily be manipulated in interdialectal development. It is predicted that differences in the underlying system have the lowest success rate in second dialect acquisition. In addition, underlying differences are the most likely to adhere to any 'critical age' constraints. Children whose age of arrival is older than, say, ten years, as well as adults are not predicted to acquire these differences.

6.2 Present-day Analysis

6.2.1 The Distinction

In both SBrE and standard GA, a distinction is made between the THOUGHT and LOT vowels. It is important to emphasise that the discussion is based on the structural and lexical distribution of the vowels. At a phonetic level, the ideal of a homogeneous, non-regional, standard General American breaks down entirely in discussing these vowels. In the American English varieties that distinguish the *caught* ~ *cot* vowels, there is much phonetic variation. This phonetic variation tends to be regional. Additionally the merger or distinction of the vowels tends to be

[167] The merger of /w/ and /ʍ/ in SBrE and in some accents of GA made use of one of the pre-existing underlying segments /w/ as a target, for example.

[168] "Standard GA" refers to those accents of American English in which minimal pairs *caught* and *cot* have distinct vowels. "Modified GA" refers to those accents of American English in which *caught* and *cot* are homophones. These terms are defined in sections 1.3.1

regional, too (see below), but is also age-related as the merger is currently expanding (Labov 1994; Labov 1996; Hartman 1985, lv-lvi).

Unlike in GA, there is considerably less variation in SBrE with regard to the THOUGHT and LOT vowels; the variation is minimal with regard to age or regional factors. The THOUGHT vowel, which corresponds to /ɔː/, in SBrE is long (Wells 1982)[169]. In SBrE, /ɔː/ was historically a centring diphthong and it has been hypothesised that the diphthong is still the underlying representation (Giegerich 1997; 1999). In some present-day accents of GA, such as the accent of New York City, a diphthong [ɔə] is realised for /ɔː/ (Labov 1994, 226). The long /ɔː/ vowel in SBrE is a "far back, over-rounded" (Labov 1994, 316) mid vowel, lying "between cardinals 6 and 7" (Wells 1982, 145) and is "decidedly more **o**-like than" in GA (Kenyon 1994, §289(5)). The /ɔː/ vowel in GA, on the other hand, is "opener, namely between cardinals 5 and 6, and has only open lip-rounding" (Wells 1982, 145).

The LOT vowel in SBrE is short. The short LOT vowel is "back, nearly open, weakly rounded vocoid, [ɒ̜], somewhat less open than secondary cardinal 5" (Wells 1982, 130). The GA LOT vowel is a "central, fully open unrounded vocoid" whose realisation ranges from a central, nearly front [a] to a back [ɑː] (Wells 1982, 130).

In GA, there is no length distinction between THOUGHT-/ɔː/ and LOT-/ɑː/. Both vowels can occur in open syllables: e.g. *law* and *paw* for /ɔː/; *spa* and *bra* for /ɑː/. In SBrE, because THOUGHT-/ɔː/ and LOT-/ɒ/ form a long-short pair, not only is there a distinctive length difference between the two vowels, but, like other long-short pairs, the quality is distinct. The distinctive quality alone, though, is insufficient in stopping the geographical expansion in the United States of the merger of these two vowels (Labov 1994, 316ff.).

6.2.2 The Merger

In about half of the geographic United States and all of Canada the low back vowels represented by the THOUGHT-LOT lexical sets have merged (Labov 1996; Giegerich 1992, 61). This merger results in homophonous pairs like *caught* ~ *cot* and *dawn* ~ *don*. Conventionally, the merged GA vowel is transcribed as a low, back, unrounded /ɑː/ or /ɑ/, although Kurath and McDavid (1961, 31-35) record a rounded, merged vowel [ɒ] or [ɔ] occurring in eastern New England. There are two main reasons for using /ɑː/ to describe the merged vowel. First, the vowel is low, back and unrounded or weakly rounded. Secondly, the symbol /ɑː/ is still associated with

[169] In Labov's transcription convention the (h) is considered a centralised off-glide, marking (oh) (representing THOUGHT) as a centring diphthong

a long vowel, and /ɑː/ continues to contrast with /æ/ in length, even after the merger with /ɔː/ (Giegerich 1992, 58-59).

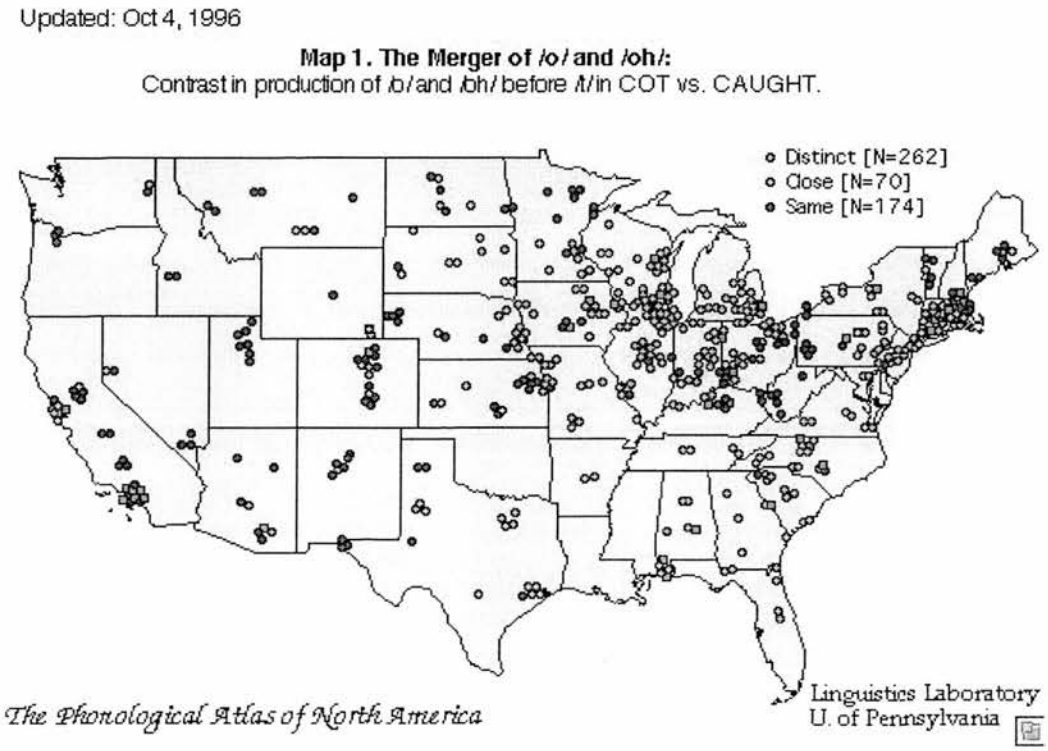

Figure 6.3: The geographical distribution of THOUGHT and LOT in the United States (Labov 1996)

As the map in figure 6.3 indicates, there are three main regions in which the merged vowel is found: western states; parts of New England; western Pennsylvania and surrounding areas. A fourth region in which there is a merged *caught* ~ *cot* vowel but not included on the map is the whole of Canada.

6.3 Historical Analysis

6.3.1 The Distinction

In both SBrE and GA, the vowel of the THOUGHT lexical set is derived from many sources. Two sources are the Middle English diphthongs /au/ and /ɔu/, as is reflected in the orthography. These vowels became present-day /ɔː/ before velar fricatives, e.g. *thought*, *cough*, *taught*. The

/au/ diphthong became /ɔ:/ in other environments, as well, e.g. *cause*, *haul*, *hawk* (Wells 1982, 145-146).

Additionally, the velarisation of /l/ in syllable rhymes lengthened a preceding /a/ in Middle English. Again, this yielded presented-day /ɔ:/ in words like *fall*, *bald*, *chalk*.

The LOT set in SBrE and GA is derived from Middle English short-o /ɔ/. This vowel is usually reflected as <o> in the orthography.

According to Labov, the current distribution of the /ɑ:/ and /ɔ:/ vowels of GA started when "short open **o** had undergone a split into a tense /ɔ:/, which joined the word class of long open **o**, and a residual lax /ɑ/" (Labov 1994, 322). The environment in which short open-o became long /ɔ:/ is largely predictable: before anterior, voiceless fricatives; before (r); before velar nasals. If it is accepted that a velar nasal is underlyingly /n/ followed by a velar stop, then these environments are nearly identical to the ones that caused Middle English short-*a* to lengthen and move back to /ɑ:/ in the BATH set of SBrE (see 5.3 above). Wells describes this variation as 'pre-fricative lengthening' (1982, 204), even though (r) and nasal and obstruent clusters are not fricatives[170]. According to Wells, this pre-fricative lengthening dates to around the 17th century, before the sharp divergence between SBrE and GA, and so was shared by the two dialects. Pre-fricative lengthening applies only to low vowels. Oddly, judging from present-day data, this rule applied to only one vowel in each dialect: /ɔ:/ in GA, yielding the CLOTH lexical set, and /ɑ:/ in SBrE. However, this is not entirely true. In some New England accents, pre-fricative lengthening applied to /ɑ:/, as well.

More importantly, Wells reports that the vowel for the CLOTH set is a long /ɔ:/ for some older SBrE speakers and suggests a fairly recent change. If this is the case, then it is possible that SBrE and GA shared the lengthening of short-o. However, there seems to be little motivation for CLOTH to merge with the /ɒ/ of LOT, particularly since /ɒ/ is a short vowel and the vowel in CLOTH is in a lengthening environment.

In GA, the vowel in THOUGHT did not distance itself from the vowel in CLOTH. Their similar phonetic realisation led to the complete merger of historic /au/ and long /ɔ:/. The merged vowel was long and was closer to the LOT/PALM vowel than in SBrE.

[170]Clearly present-day (r) is not a fricative. However, historic (r) may have been, as is seen by this lengthening environment. Also, in Scots and Scottish Standard English, vowels become long before voiced fricative and before (r), suggesting that (r) at one time patterned with the fricatives.

6.3.2 The Merger

The merger of the *caught* ~ *cot* vowel in American English started some time in the nineteenth century. Labov finds a New England spelling reformer from the early 19th century criticising a predecessor for distinguishing the *o* in *not* and the *a* in *far* (Labov 1994, 316, fn.8). New England is denoted as region 1 in Figure 6.3, and is one of the four main regions where the merger exists today.

In region 2, western Pennsylvania, Kurath and McDavid (1961, 17) note a merged vowel amongst their older, higher-status informants who were born at the end of the 19th century. There is no way to know if their informants were the first to experience the merger of if the merger had been established for a few generations.

Today, a considerable geographic distance in which the THOUGHT and LOT vowels are distinct separates western Pennsylvania and New England, where the vowels are merged. It is possible that the merger developed independently in the two regions. There does not seem to be any stigma or prestige to sociolinguistically motivate the merger in either region, nor does there seem to be any stigma or prestige attached to the distinct vowels, either (Labov 1994, 343). The merger was probably brought to the western United States and Canada with the westward migration of the 19th century.

Wells suggests that the merger could have possibly been brought to North America from Scots and Scots-Irish immigrants to the Pennsylvania area (Wells 1982, 474). This would explain how such a similar phenomenon occurred in two varieties of English separated by a large body of water. However, in Scots and Scottish Standard English of today, the PALM lexical set has the vowel of the TRAP set while the vowel of the LOT set merged with the THOUGHT and CLOTH vowel. These mergers are likely to have come about through the loss of distinctive length in Scots (Johnston 1997a; 1997b). If the merger were directly introduced into American English from Scots or Scots-Irish immigrants, then an account would have to be made for how the PALM set came to have the vowel of the THOUGHT/CLOTH/LOT set rather than that of the TRAP set.

It is possible, as Wells suggests, that there may have been some 'Celtic fringe' influence[171] in the merger of the *caught* ~ *cot* vowels in parts of North America. It is also equally possible that the merger developed independently in North America. In the recent history of SBrE and GA English, there has been a lot of movement and merger in the low, back region of the vowel

[171] The Scots and Scots-Irish influence and migration is usually associated with the South and South Midlands varieties of American English (see Montgomery and Nagle 1992).

trapezium. Phonetic similarity, as a result of this movement, may have been enough to motivate the merger of THOUGHT/CLOTH with LOT in GA.

Departing temporarily from generative terminology, there may have also been a phonemic motivation for the merger. In SBrE and GA, monophthongs form pair-wise relationships[172]. In each pair, there is a tense member and a lax member, for example, *beat* [iː] and *bit* [ɪ]. Tense vowels in SBrE and GA are long while lax vowels are short. Tenseness is not applicable to the low vowels corresponding to the TRAP, LOT, THOUGHT and PALM lexical sets (Halle 1977). However, the low vowels continue to pattern into pairs with one member being long and the other being short (Giegerich 1992, 59).

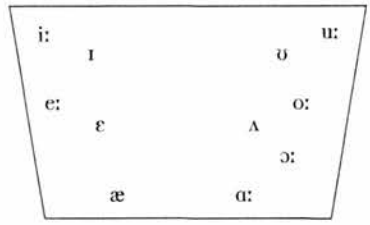

Figure 6.4: GA vowel phonemes

The low, front vowel /æ/ is the short counterpart to the low, back vowel /ɑː/. Most of the long-short pairs have the same features of height, backness and roundness. These two vowels /æ/ and /ɑː/ are considered a long-short pair, even though one is a font vowel and the other is a back vowel.

In those varieties of GA in which a *caught* ~ *cot* distinction is made, the THOUGHT vowel /ɔː/ is not part of any long-short pair. It is the only phonemic monophthong except /ɝ/[173] that is not a member of a pair in GA. Phonemic symmetry might be a non-phonetic motivation for the merger of /ɔː/ and /ɑː/. A certain combination of phonemic symmetry and phonetic similarity seems plausible motivation for the otherwise unconditioned merger.

One immediate result of the merger is that the output of the merged vowel encompasses the whole range of the outputs of the two separate vowels. Like the merger of /w/ and /ʍ/, it would have been possible for the target of the merger to occupy the acoustic space of only one of the two previous vowels[174], which is a merger by transfer (Labov 1994, 321). It is also

[172] The central vowels associated with (r), [ɜː] and [ɝː], are an exception to this pattern and are discussed in 7.

[173] See the following chapter.

[174] Cf. footnote 167

possible for the two vowels to have converged on a median acoustic space that might have slightly overlapped the space of the two previous vowels, but did not encompass the whole acoustic space of both vowels, which is a merger by approximation (Labov 1994, 321).

However, Kurath and McDavid describe the merged vowel as having "a considerable range of allophones" (1961, 17) amongst informants. Labov classifies this kind of vowel merger as a 'merger by expansion'.

> In this merger by expansion, the lexical constraints on the distribution of the two former phonemes are removed, and the range that was previously divided between the two phonemes is used for the new phoneme, with allophonic distributions in appropriate areas of the new range (Labov 1994, 322-323).

Herold (1990) recorded this same type of merger in the town of Tamaqua in eastern Pennsylvania. The merger of /ɔ:/ and /ɑ:/ took place within a single generation (as cited in Labov 1994, 321-323).

Today, the merger is geographically expanding. Because the expanding merger is a change in progress, determining the status of these vowels in the D1 of some of the American participants is difficult, particularly those families who come from New England and Pennsylvania. However, the English families in this study who moved to North America all live in areas in which the merged vowel has been established for some time.

6.4 Interdialectal Analysis

Word List	Reading passage
don and dawn	they couldn't stop talking about it
gnawed and nod	
hot water bottle	
a lawn cot	
jolly St. Paul	
strawberry blond	
a naughty tot	
caught in a knot	
rotten, raw eggs	
lots of hawks by the loch	
the slaughter of the Scots	

Table 6.1: Elicitation tokens for *caught ~ cot*

The primary aim of this chapter is to see if the merger or the distinction is acquired. For that reason, only data from the word list and one phrase from the reading passage were examined. In the word list, the two potential vowels are in paired sets. Such data allows for direct and immediate examination of the vowels with respect to each other.

In the reading passage, except for the phrase *stop talking*, some distance often separates the THOUGHT and LOT vowels. Although the reading passage provides more potential realisations of the THOUGHT and LOT vowels in a less formal situation, it is more practical to describe the vowels as the 'same' or 'different' when they occur in the same, short phrase.

The two vowels were considered 'different' if the vowel quality and vowel duration were both distinguished. Likewise, the vowels were considered the 'same' if there was neither qualitative nor durational difference. The responses were marked as 'intermediate' if the vowels differed in either quality or length, but not both.

6.4.1 Americans in Britain

It was stated in section 2.1.3 that this thesis uses a contrastive analysis. One of the premises of a contrastive analysis is to have a full description of both the native variety and the target variety in order to accurately compare and contrast them.

It was stated in the previous section that the merger of the /ɔː/ and /ɑː vowels in GA is expanding geographically. Several families examined in this thesis either came from areas that border border regions in which the vowels have merged (see figure 6.3) or were mobile between merged and non-merged regions. Because of mobility and the expansion of the *caught* ~ *cot* merger in the United States, it is unknown whether or not many of the participants had a merged vowel in their D1.

These complicated sociolinguistic situations mean that the status of the THOUGHT and LOT vowels in the first dialect cannot easily be determined. A contrastive analysis cannot be made. There is no way to map the progress from the D1 towards the D2 because the exact situation in the D1 is unknown and the acquisition of the distinction of these vowels cannot accurately be tested. Therefore, no data examining native GA speakers acquiring the SBrE distinction between the THOUGHT and LOT vowels will be presented (Shockey, p.c.).

6.4.2 Britons in North America

Determining the status of the THOUGHT and LOT vowels for the native and target varieties of Britons in North America is uncomplicated. For all of the accents of Britain represented, THOUGHT-/ɔː/ and LOT-/ɒ/ form a long-short pair. These families live in Canada, Silicon Valley

and the Phoenix area, where the local, native speakers have a merged, long, vowel (see figure 6.3 above)[175].

There seems to be no overt prestige or stigma attached to the merged or distinct vowels (Labov 1994, 343). Speakers of American English that distinguish THOUGHT and LOT have no social motivation for acquiring the merger, for example. This same lack of social motivation seems to apply to English immigrants: all live in regions where the merger is prevalent, yet some participants continue to maintain the distinction between the vowels while others seem to be acquiring the merger.

There were four individuals that continued to distinguish vowels in both length and quality. Upon arriving in North America, their ages ranged from eleven to thirty-seven years old, with only the youngest being in the 'sensitive period' for phonology (Long 1990).

However, age is not the only factor in inhibiting idiolectal change. For example, participant AAM arrived in the U.S. at the age of seven, two years younger than one sibling, participant NM. Participant AAM distinguished the vowels in all potential occurrences except one. Participant NM produced a merged vowel in five phrases. Chambers (1992) makes the distinction between 'early acquirers' and 'late acquirers'. This distinction is only loosely correlated with age, as is exemplified with these two siblings. Clearly factors other that age encourage or discourage idiolectal change.

The earliest stages in acquiring any 'single' feature is erratic, as Chambers notes in one of his hypotheses: "In the earliest stages of acquisition, both categorical and variable rules of the new dialect result in variability in the acquirers" (1992, 691; see also (12)) [176].

Participant TL shows such a pattern. Despite imitating his father who was recorded while TL was in the room, participant TL does not have an SBrE-like pattern for the THOUGHT and LOT vowels. TL has not merged the vowels either. In two phrases, TL does not distinguish the vowels at all. In most of the other phrases, TL distinguishes the duration and quality of the vowels. In two phrases, *gnawed and nod* and *caught in a knot*, TL distinguishes only the length of the vowel.

Participants DP and JAP also distinguish the *caught ~ cot* vowels. DP usually keeps the vowel quality distinct, but distinguished only the duration of the vowels in three phrases: *don*

[175]This assumes that there are no large groups of immigrants affecting the dialectal demographics of the particular community (see Payne 1980).

[176]A 'rule' is conceptually one phonological phenomenon that can have various components and varying degrees of complexity. For example, this chapter is concerned with the merger or distinction of two vowels; the chapter on rhoticity deals with centring diphthongs and sandhi as well as (r) itself. Both examples are treated as one rule by Chambers, even though there are several component features.

and dawn, *gnawed and nod* and *jolly St. Paul*. JAP distinguishes the vowels in quantity and quality, but in two phrases JAP makes a slight distinction in length and produces non-distinct vowels in one phrase.

Participants TL and JAP, being in the early stages of acquisition of the THOUGHT ~ LOT merger, produce merged tokens. TL, JAP and DP do not systematically distinguish the vowels either in length or quality or both; nor do they systematically produce merged vowels. It is the lack of systematicness that suggests that they are in the early stages of acquisition.

Participant AAM, on the other hand, consistently distinguishes the quality of the vowels. In the phrase *a lawn cot*, AAM distinguished only the length of the vowels, and in the phrase *gnawed and nod*, AAM distinguished the vowels in duration and quality, uttering the SBrE values for the vowels. Participant AAM has not acquired the *caught* ~ *cot* merger, but has acquired the non-distinction in length.

Other participants seem to distinguish only the duration of the vowels. Participant CM, for example, produced five tokens in which the THOUGHT and LOT vowels were non-distinct, but in two of the remaining three tokens – the phrases *jolly St. Paul* and *strawberry blond* – CM made a distinction between the length of the vowels.

Participant NM also produced a merged vowel in five phrases, but distinguishes the vowel quantity in *don and dawn*, *gnawed and nod*, *a lawn cot* and *strawberry blond*. In two phrases, one of which contained the minimal pair*gnawed and nod*, NM also makes a slight distinction in vowel quality. Although the vowel qualities in the two phrases were impressionistically distinct, their difference could have been within the range of a single underlying representation. This will be explored in section 6.4.3 below.

In another family, participant JH uttered a merged vowel in three phrases. In two other phrases, JH distinguished the quality and length of the vowels. In the remaining five phrases, JH distinguishes the vowels in duration only: *don and dawn*; *a lawn cot*; *jolly St. Paul*; *a naughty tot*; *rotten raw eggs*.

The distinction in length contradicts participant AAM's distinction in quality. However, participants CM, NM and JH produced more merged tokens and seem to have idiolects closer to modified GA than AAM. Once one is past the variable initial stages, the next stage is the acquisition of one of the component features of the phenomenon. For AAM, the component feature is length, or the lack thereof. For CM, NM and JH, the component feature is vowel quality.

In acquiring the *caught* ~ *cot* merger with SBrE as a first dialect, the acquirer must make the vowels non-distinct in both quality and quantity. Several participants use either duration or quality or both to maintain the distinction. However, the aspects of duration and quality are not necessarily acquired concurrently: participant AAM has acquired a non-distinction in length and has essentially acquired the standard GA pattern; participants CM, NM and JH have acquired a non-distinction in quality. This lack of qualitative distinction seems to facilitate the further acquisition of the modified GA pattern, since more tokens with merged THOUGHT ~ LOT utterances are produced.

Participant	AA	D1	ID	D2	Percentage change	ID classification
AL	3.77	4	4	1	55.56	4 pair x [ɔ:]
DP	4.44	4	6	1	63.64	4 x different length, 2 x different quality
CM	5.04	0	5	5	100.00	2 x different length, 3 x different quality
JMP	6.65	6	4	1	45.45	3 x different length, 1 x different quality
TL	6.67	7	5	0	41.67	3 x different length, 2 pair x [ɔ:]
AAM	7.15	10	1	1	16.67	1 x different length
JH	7.33	0	7	5	100.00	7 x different length
NM	8.35	1	5	6	91.67	5 x different length
TH	10.93	9	3	0	25.00	3 x different length
AS	14.27	11	1	0	8.33	1 pair x [ɒ:]
CS	17.52	12	0	0	0.00	
AWM	36.54	12	0	0	0.00	

Table 6.2: Acquisition of the *caught* ~ *cot* merger by Britons in North America

6.4.3 Acquiring the caught ~ cot merger: a case study

The analysis thus far has compared the THOUGHT and LOT vowels to each other within single phrases. This type of analysis tests item-by-item whether or not a distinction is made. For some, there is a categorical distinction. But not one English participant in North America consistently produced a merged vowel. In some phases, there may be non-distinct vowels, but in others, the vowels are kept distinct either by quality or quantity or possibly both.

Some native SBrE speakers acquiring modified GA demonstrate the same kind of language change as is seen in the spread of the *caught* ~ *cot* merger in the eastern United States (see 6.2.2 above). Labov proposes that the acoustic space of the merged vowel is the union of the acoustic space of the previously two individual vowels. This enlarged acoustic space allows for cases in which two impressionistically distinct vowels fall within the (expanded) acoustic space of one underlying representation.

It is possible that for some participants, the merged vowel has been acquired, even though there may be a (qualitative) difference between two vowels in a given phrase. For SBrE speakers acquiring the modified GA merger, there may be some residual D1 influence. The

D1 influence may be enough to keep the vowels distinct in a given phrase, but not enough to keep the two vowels categorically distinct.

One family was chosen to see how the merged *caught* ~ *cot* vowel of modified GA is acquired by those with a Southern British English background as compared to the geographic (and historical) expansion of the merger in the eastern U.S. The parents of the chosen family, henceforth referred to as the M family, still make a clear lexical distinction between the THOUGHT-/ɔː/ and LOT-/ɒ/ vowels.

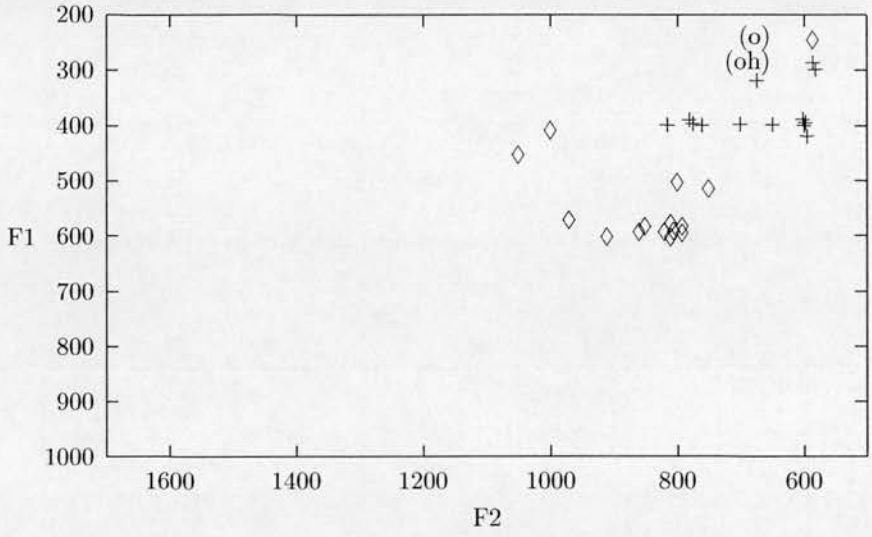

Figure 6.5: F1 and F2 values for the *caught* (+) and *cot* (◊) vowels for AWM, father

As can be seen in figures 6.5 and 6.6, there is no overlap between the acoustic space of /ɔː/ and the acoustic space of /ɒ/ for either parent. There are still lexical constraints determining which word has which vowel. A similar pattern can be seen for participant AAM in figure 6.7.

There is some minor overlap between the two vowels for participant AAM. This suggests that the boundary between the vowels is becoming unstable. It is also interesting to note that both vowels are lower and more front than the values for either parent. The LOT vowel might even have an [ɑː]-like realisation.

For participant NM, there is no clear boundary between the THOUGHT and LOT vowels, as can be seen in figure 6.8. It would appear that participant NM has a merged vowel.

The vowel space of participant NM's merged vowel has the same range and the union of the two separate vowels, as compared to participant AAM. The vowels seem to cluster around what would be the proprietary space of the LOT vowel in the parents' idiolects. This is possibly

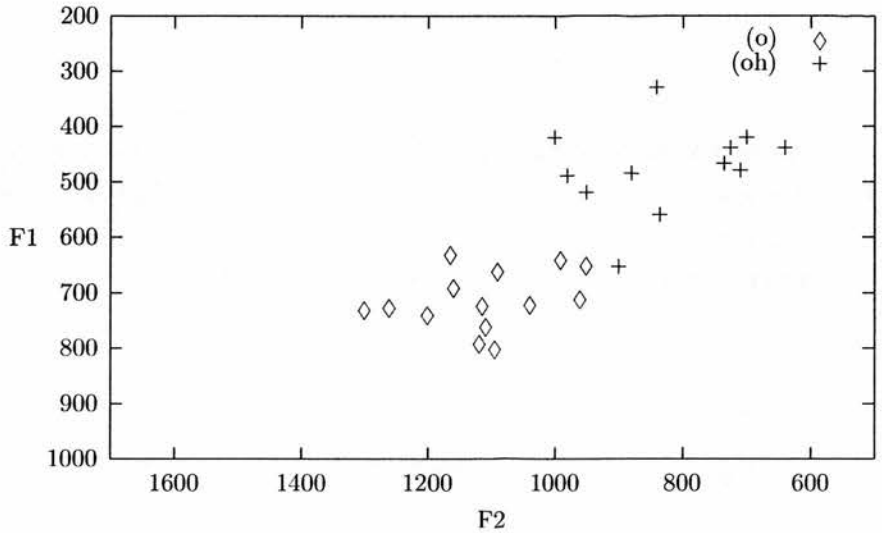

Figure 6.6: F1 and F2 values for the *caught* (+) and *cot* (◊) vowels for IM, mother

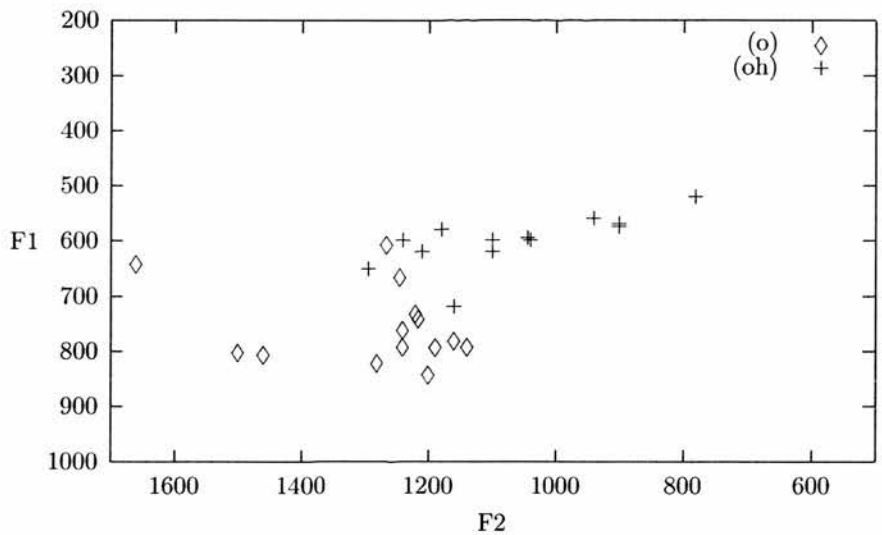

Figure 6.7: F1 and F2 values for the *caught* (+) and *cot* (◊) vowel for AAM

because the acoustic space of the modified GA *caught* ~ *cot* vowel lies outwith the acoustic space of the SBrE THOUGHT vowel. The average frequency for the first formant of GA [ɑː] is 750 Hz and the average frequency of the second formant is 1100 Hz (Olive, Greenwood, and

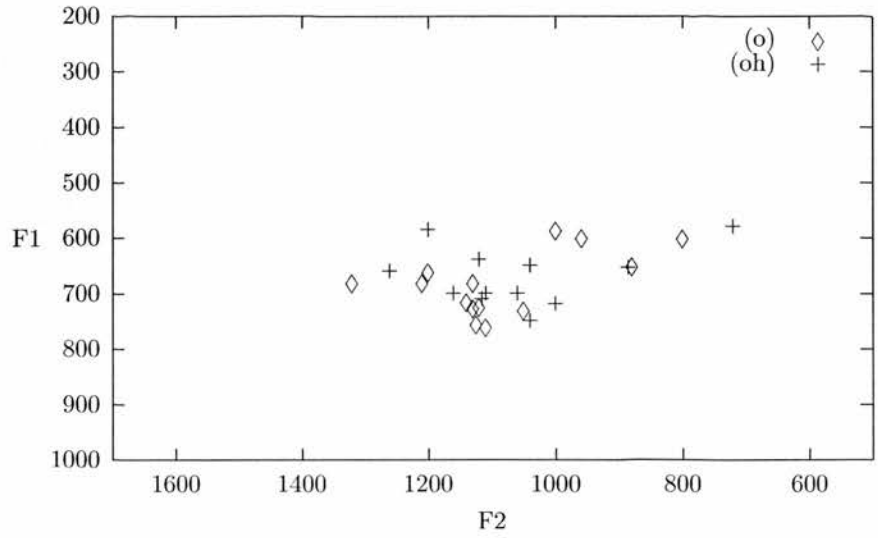

Figure 6.8: F1 and F2 values for the *caught* (+) and *cot* (◊) vowels for NM

Coleman 1993, 104). The average F1 frequency for participants NM's merged vowel is 676 Hz and the average F2 frequency is 1073 Hz. NM's vowel closely approximates the GA vowel[177].

Participant CM also has a merged vowel, as seen in figure 6.9. The average F2 frequency of CM's merged vowel is 1330 Hz and the average F1 frequency is 790 Hz. This is nearly a low, central [a]. The range of CM's merged vowel barely falls in range of the LOT-/ɒ/ vowel of either of his parents. Like NM, CM's vowel clearly falls in the range similar to AAM's vowels. Indeed, the vowel space of CM's merged vowel is more restricted than the union of the vowel space of AAM's vowels. Instead, CM's vowel falls only within the range of AAM's LOT vowel. This is more like a merger by transfer, which is "a unidirectional process in which words are transferred gradually from one phonemic category to another" (Labov 1994, 321).

A merger by transfer generally reflects social stigma or prestige (Labov 1994, 321). It has been stated earlier that there is no overt stigma or prestige concerning the merged *caught* ~ *cot* vowel. Participant CM is the youngest member of the M family and arrived in the U.S. at the age of five. There is perhaps more social pressure to speak like one's peers at CM's age, which would give the merged vowel a certain amount of prestige. It is also possible that CM has acquired the modified GA *caught* ~ *cot* vowel as part of first dialect acquisition. There might not be any internalised 'D1' (SBrE) influence trying to keep the vowels distinct as there is for

[177]It is unlikely that the apparent centralisation of participant NM's merged vowel was caused by a high voice or a small head: he was aged 16 at the time of the interview (Shockey, p.c.).

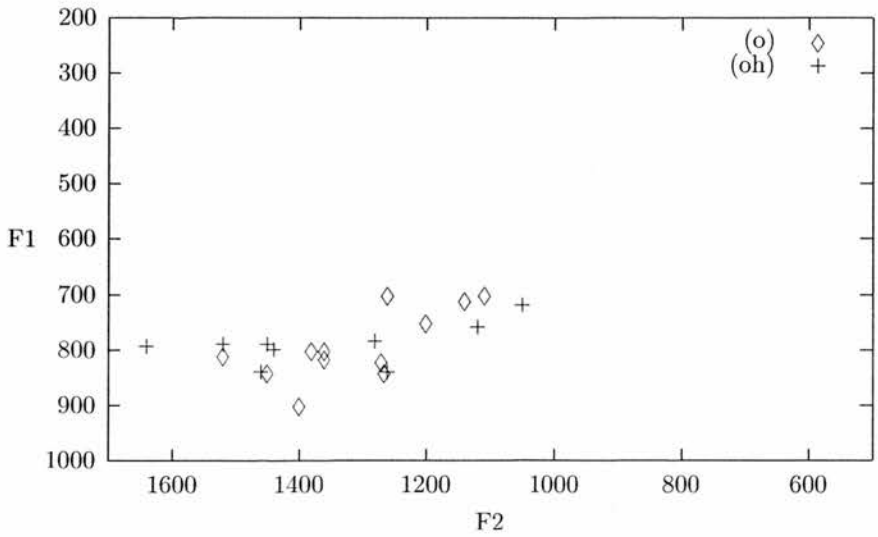

Figure 6.9: F1 and F2 values for the *caught* (+) and *cot* (◊) vowels for CM

CM's siblings. More importantly, except for parental contact, there is no environmental SBrE influence on the phonetic realisation of the vowel.

The acquisition of the *caught* ~ *cot* merger within the M family does not quite follow the path predicted by Labov's merger by expansion. In the eastern United States and probably throughout North America, the acoustic space of the merged vowel overlaps the acoustic space of the distinct vowels. It was mentioned earlier that the phonetic realisations of the THOUGHT and LOT vowels differ between GA and SBrE, despite having very similar structural and lexical representation. The merged vowel of modified GA that the children of the M family are targeting has an acoustic space that overlaps the space of the union of the two standard GA vowels. However, this target may well be outside of the acoustic space of the native SBrE vowels. Since the target vowel does not fall within the range of the union of the SBrE vowel, a merger by expansion, as presented by Labov, is unlikely, at least directly.

The acoustic space of participant AAM's THOUGHT and LOT vowels is closer to standard GA values. This suggests that, while the boundaries between THOUGHT and LOT become unstable, the acoustic space of both of the vowels concurrently becomes lower and more front. CM and NM do not exemplify a merger by expansion when compared to their parents. However, if the pre-merger values of the THOUGHT and LOT vowels were similar to AAM's, then participant NM follows the merger by expansion pattern. Participant CM, on the other hand, still follows a merger by transfer pattern.

In a merger by transfer, the value of the merged vowel is the same value as one of the previously distinct vowels. The phonetic value of CM's merged vowel is not really similar to either vowel of either parent. However, CM's merged vowel is similar to AAM's LOT vowel. This further supports the idea that in the acquisition of the merger, the phonetic values of THOUGHT and LOT change to more GA-like values, and the merger of the underlying categories begins after the initiation of this phonetic change.

Clearly the merger or distinction of the THOUGHT and LOT vowels is a difference of underlying categories between SBrE and modified GA. At the same time, there are also phonetic differences between the GA and SBrE vowels. Although this chapter aimed to examine the phonological phenomenon, it is clear that the phonetic situation plays a role in the acquisition of a second dialect.

6.5 Comparison, Discussion and Conclusion

The THOUGHT ~ LOT vowel is variable within GA. This variability makes if very difficult to determine if some of the participants have a merged vowel or a distinct vowel in their native dialects. If the merged vowel is, indeed, part of the D1, then there has been a lot of idiolectal change in reversing the merger. The reversal itself is not successful, but it seems clear that some of the speakers have a metalinguistic awareness that the vowels should remain distinct. However, there may not be linguistic knowledge of *how* the vowels should become distinct: there are no rules or governing environments that separate the phones into two realisations as there was for the BATH vowel or for medial /t/.

6.5.1 Statistical Comparison

6.5.1.1 Comparison Between Groups

Because no analysed data was presented for the group of native GA speakers acquiring SBrE, no statistical analyses can be made between groups.

6.5.1.2 The Low, Back Vowels /ɔː/ and /ɑː ~ ɒ/ Compared to the BATH and Medial /t/

Because no analysed data was presented for the group of native GA speakers acquiring SBrE, no statistical analyses can be made comparing the native GA speakers acquiring the SBrE THOUGHT ~ LOT vowels to the other phonological variables examined thus far.

The D1 situation is much clearer for native SBrE speakers acquiring GA, and thus brief statistical analyses can be made. Both tapping and the BATH vowel had higher success rates than the THOUGHT ~ LOT merger. However, using the Wilcoxan test for non-parametric means, the success rates for both tapping and the BATH vowel are statistically insignificant (tapping, p = 0.685, Z = –1.478; BATH, p = 0.685, Z = –1.481) as compared to the THOUGHT ~ LOT merger.

6.5.2 Age

The older native SBrE speakers, AS, CS and AWM, showed almost no change at all towards acquiring the Canadian/Western GA *caught ~ cot* merger. In terms of Flege's (1995) equivalence classification model it is possible that the target vowel is similar enough to the native vowels not to merit a classification of 'different' by the dialect learners. Not acquiring the merger does not impair comprehension or communication[178].

It is clear that interdialectal development of a merger of underlying categories is less likely to occur the older a participant is. This suggests that the critical age is a factor contributing to the acquisition of underlying differences. However, one of the stated aims of this thesis is that underlying phonological differences are less likely to undergo change. It is unknown whether age, phonological structure or an interaction between the two is the cause of the relatively smaller degree of interdialectal change regarding the *caught ~ cot* variable.

6.5.3 Conclusions

Acquiring the THOUGHT ~ LOT vowel(s), either the merger or the distinction, is similar to acquiring a lexical split. A large group of words associated with one vowel in the D1 must become associated with another vowel in the D2. However, unlike the BATH lexical difference, there is no rule to acquire. In acquiring the distinction as a lexical split, there is a certain amount of randomness as to which words are assigned to the new vowel and which are not. In acquiring the merger, all the SBrE LOT vowels /ɒ/ are affected, but the THOUGHT set /ɔ:/ has to be distinguished from the NORTH/FORCE set /ɔ:/ if the first dialect is non-rhotic.

The difference in the D2 value of the underlying representation of the THOUGHT ~ LOT vowel(s), will result in some phonetic variation. The phonetic properties of the vowels play a role in acquiring the merged vowel of modified GA. It was shown in the case study that the acoustic values of AAM's THOUGHT and LOT vowels approximated the standard GA values.

[178] Although the merger would lead to several homophonic pairs.

This brought the acoustic space of the two vowels very close together and there was even some minor overlap in AAM's vowels. The acquisition of the different phonetic properties of these two vowels may have provided the motivation for merging the vowels, as was seen in participants CM and NM.

It is clear that the acquisition of underlying representations cannot occur independently of phonetic modification. This ties in with one of Chambers's hypotheses, which states: "Phonological innovations are actuated as pronunciation variants" (1992, 693; see also example (13)). Any change to the underlying system of segments will be manifest in the phonetic output. Likewise, any change in the phonetic output has the potential to affect underlying categories. This kind of phonetic-driven phonological change is is highlighted in the following chapter, which is about the acquisition of rhoticity and non-rhoticity.

Chapter 7

Rhoticity and Liaison of (r)

7.1 Introduction

A rhotic dialect is defined as one in which [r] – or some retroflex sonorant variant such as rhoticised schwa [ɚ] – is permitted in syllable rhymes[179]: that is, before consonants and pauses[180]. General American and Scottish Standard English are two examples of rhotic varieties. Southern British English, a non-rhotic dialect, has a phonotactic constraint in which a consonantal [r] can only occur in syllable onsets. This phonotactic constraint is due to the historical changes brought about during the evolution of syllable rhyme (r)[181].

Rhoticity is one of the main variables that divides the English-speaking world into two major groups. At first glance, the different treatment of rhoticity between GA and SBrE seems to be a rule-governed difference or a lexical difference predictable by a rule[182]: in non-rhotic SBrE, /r/ is deleted before consonants and pauses. It is true that there is a realisational element in the difference between the rhotic GA and the non-rhotic SBrE. However, it will be argued that the difference is actually phonetic rather than rule-governed. The phonetic quality of

[179]The symbol [r] is technically an alveolar trill, as prescribed by the IPA. However, for the purposes of this thesis, the symbol [r] is broadly used to represent a central, alveolar approximant with varying degrees of constriction depending on dialect, speech rate, phonological environment, etc.

[180]'Syllable rhyme (r)' will refer to (r) before consonants and pauses for the remainder of the discussion. The re-syllabification of syllable rhyme (r) before vowels is discussed in section 7.2.4.

[181]The underlying representation of (r) will be discussed in the following sections. The rounded brackets are an extension of a broad phonetic transcription. The underlying structure of a rhotic vs. a non-rhotic system may differ, thus making a direct comparison of underlying representations transcription difficult typographically. It is particularly because of rhoticity that the parenthetic notation indicating sociolinguistic variables was borrowed from Labov.

[182]Such as the BATH lexical set, discussed in chapter 5.

syllable-rhyme (r) itself differs between the two varieties, and this difference has historically led to differences in underlying representations.

The difference between the THOUGHT ~ LOT vowels is a simple underlying categorical difference. It is simple in the fact that there is only one pair of vowels that either contrast or are merged. It will be shown below that rhoticity entails at least three such pairs of vowels. The loss of rhoticity in SBrE led to the development of a secondary system of underlying categories. It will be demonstrated that the difference between the GA and SBrE (r) is more than a realisational difference or even just an underlying difference. The difference between rhotic and non-rhotic varieties is a complex of multiple underlying categorical differences in addition to different articulation of (r).

Despite the underlying difference that exists between the dialects, the difference with respect to (r) between GA and SBrE is not as great as is presented in standard references (e.g. Wells 1982, 242-244, 212ff; also, Wells's choice of symbols represented by the lexical sets NEAR, SQUARE, START, NORTH, FORCE, CURE). The discussion of the phonetic difference of (r) will show that there were some changes to (r) shared by SBrE and GA prior to the decisive split between the two varieties.

Because of the underlying aspects of the difference, it is predicted that the acquisition of rhoticity or non-rhoticity will have the least successful results of all of the phonological variables studied here. Additionally, no intermediate responses are expected. In this case, an intermediate response would be a token whose phonetic value is between [ə] and [ɹ] ~ [ɚ]. These two sounds differ mainly in the height (frequency) of the third formant (F3) – much like the F2 frequency between [æ] and [ɑ:] of the BATH vowel. However for (r), no intermediate values are expected. Instead, tokens are expected to be either a non-rhotic [ə] or a rhotic [ɹ] ~ [ɚ], not somewhere in between. Some degree of idiolectal change and interdialectal development are still predicted, though. As a result, the interdialects will have both native D1 and target-like D2 realisations of (r). The acquisition of the phonetic realisation of (r) will be fundamental in any subsequent change to the underlying representation.

Chambers (1992) treats intrusive-r as a separate variable in dialect acquisition. Intrusive-r is the presence of an intervocalic, consonantal [r] in an environment where no (r) existed historically. Standard orthography and the distribution of (r) in rhotic varieties such as GA or Scottish English are the exemplars of historic (r). Intrusive-r "is concomitant of R-lessness, as indicated by the fact that it is found only in accents which have a rule deleting /r/s nonprevocalically" (Chambers 1992, 692): that is, intrusive-r is only ever found in

non-rhotic varieties[183]. Wells's description, along with other standard descriptions of SBrE, treat intrusive-r as a separate rule in addition to the loss of rhoticity. An intimate relationship between non-rhoticity and intrusive-r will be argued in the following sections.

In the previous sections, a present-day account of a phonological feature was followed by a brief historical description. In discussing rhoticity and the loss thereof, prior understanding of the history of (r) is beneficial, as will be shown below. For that reason, a diachronic analysis will precede the present day description of the treatment of (r) in SBrE and GA.

7.2 Historical Analysis

7.2.1 Breaking, laxing and deletion

The first stage of the loss of rhoticity started with the diphthongs /ʌu/ and /ʌi/ in the 15th or early 16th century – around the same time as the Great Vowel Shift – and worked its way through the vowel system, from high to low (Dobson 1957, 760-761).

According to traditional accounts (e.g Wells 1982; Dobson 1957; Kamińska 1995; Jones 1989), in the environment of a following /r/, the diphthongs and the non-low, long, tense vowels underwent a rule of breaking: an epenthetic vowel [ə][184] was inserted between the long, tense vowel and /r/[185].

$$(37) \qquad \emptyset \rightarrow [ə] \,/ \begin{bmatrix} - & \text{consonantal} \\ + & \text{tense} \\ - & \text{low} \end{bmatrix} \text{---} [r]$$

Breaking before /r/ had a fairly long history in the phonology of English. In the Old English (Jones 1989, 33-58) and Middle English (Jones 1989, 141-171) periods, vowels before /r/ underwent a similar breaking processes to the process that led to what has become modern non-rhoticity (Jones 1989, 236-253).

One possible motivation for breaking before /r/[186] is that the oral tract will configure to the appropriate articulation for schwa on its way from most (non-low) vowels to the approximant

[183]There is the possible exception of a lexicalised (r) in idea /aɪdɪəɹ/ in rhotic varieties of Boston, New York City or Scottish Standard English (cf. footnote 213).

[184]Schwa or [ə] is used as a general term and symbol for a neutral vowel unspecified for height, backness and roundness. The actual realisation of the vowel varies. For this thesis [ə] is used to encompass all realisations of a neutral vowel found in unstressed syllables.

[185]At this point in the history of English, it is unknown if the feature [tense] was applied to peripheral (long) vowels. However, the modern reflexes of peripheral vowels are the tense vowels, which are also long. For this discussion, the terms long, tense and peripheral are used interchangeably, as are the terms short, lax and non-peripheral.

[186]As well as /l/ in some modern dialects.

[ɹ] (McMahon 1996, 80; Wells 1982, 214). However, Dobson asserts that "this glide [ə] is in effect given off by the *r*, for the reason that ModE [r] is closely allied to the vowel [ə]" (1957, 760). Dobson touches on a very important point of the nature of /r/. Perhaps the nature of (r) itself was changing. Instead of epenthesis, it is possible that [ə] was what was actually produced in the transition stage, but [r] was perceived. If the articulation of (r) itself were changing, then a schwa-like realisation of syllable-rhyme (r) would not be restricted to following only non-low vowels, as Sweet suggests:

> ... the **r** which many unphonetic observers persist in hearing in [farther] is, of course, only the ə which is just as distinct in *father* (Sweet 1908, 64, cited in (Giegerich 1997, 26)).

The fact that [ə] appears after a low vowel in lieu of an r-like sound suggests that the presence of [ə] between a non-low vowel and [ɹ] is not caused by epenthesis, but by the change in the consonantality of (r). It is possible that [r] and [ə] were interchangeable in syllable rhymes since acoustically these two sounds are very similar:

> Spectrograms for schwa and approximant [r] indicate that the spectral shapes for the two sounds are rather similar, except that F3 for [r] is kept low by some fairly complex articulatory maneouvres. If this articulatory effort is relaxed at all, the F3 will raise, and the resulting spectral shape will resemble the shape of schwa very strongly (McMahon 1996, 80-81).

So, instead of epenthesis, [r] may have directly undergone lenition, becoming [– consonantal] in syllable rhymes. The 'fairly complex articulatory maneouvres' are relaxed before consonants and pauses [187].

(38) /r/ → [– consonantal] / $\overset{\text{Rh}}{\underset{\perp}{\ }}$

There[188] is a phonotactic constraint in English phonology that does not permit a long vowel and a second vowel – either [ə] or a [– consonantal] (r) – to occupy the same syllable nucleus (Giegerich 1992, 159ff). So, the long, tense vowels that preceded the epenthetic [ə] or elided [r] became shorter and lax starting around 1600 (Dobson 1957, 726-745).

(39) [– consonantal] → [– tense] / ___ [ə]

At this stage, we have the historical derivation outlined in table 7.1.

According to Dobson (1957, 758-759), the short, lax vowels merged to schwa before tautosyllabic syllable-rhyme /r/ around the same time as Pre-R breaking (37) and pre-schwa

[187] Historically, rule (38) would have started as a phonetic rule, but has since become phonologised.

[188] The symbol "⊥" means "here, in this position. So, the environment $\overset{\text{Rh}}{\underset{\perp}{\ }}$ means "in the position of syllable rhyme". See, for example (Giegerich 1992, 302). Cf. footnote 58

	fear	hair	poor
Underlying Representation	/fir/	/her/	/pur/
weakening/vocalisation (38)	[fiɪ]	[heɪ]	[puɪ]
breaking (37)	[fiəɪ]	[heəɪ]	[puəɪ]
laxing (39)	[fɪəɪ]	[hɛəɪ]	[pʊəɪ]

Table 7.1: Historical derivation of tense vowels followed by /r/.

laxing (39). Words like *bird* /ɪr/, *word* /ʌr/, *herd* /ɛr/ all become pronounced with identical syllable nuclei, today realised as [ɜː] in SBrE or [ɝː] in GA (see also Wells 1982, 200)[189].

$$(40) \qquad \begin{bmatrix} - & \text{consonantal} \\ - & \text{tense} \end{bmatrix} \rightarrow [ə] \,/\, \_\_\_\, [r]$$

The next stage in the loss of rhoticity according to some accounts (e.g.Wells 1982; Dobson 1957) was the deletion of /r/ before consonants and pauses. In other words, /r/ became deleted in syllable rhymes[190].

$$(41) \qquad [r] \rightarrow \emptyset \,/\, \overset{\text{Rh}}{\perp}$$

The deletion of /r/ before consonants and pauses had an effect on the underlying system of contrasts. The centring diphthongal realisations [ɪə, ɛə, ʊə, ɔə, (ɒə)] were no longer context-conditioned since the governing context of a following /r/ was deleted. Hence, these diphthongs became phonologised. The deletion or vocalisation of syllable-rhyme (r) has left modern SBrE with a secondary set of vowels to compensate for the loss: centring diphthongs, schwa and long, low monophthongs. These will be discussed below in the following sections, as will the realisation of these underlying representations before vowels in both 'linking' and 'intrusive' environments in section 7.2.4. First, however the vocalisation of (r) should be considered.

7.2.2 Direct Vocalisation of /r/

According to the traditional accounts, the loss of rhoticity was a three-step process: breaking (37); laxing (39); deletion (41). A basic account such as this fails to capture the motivation for the innovation of such processes.

[189]The distinction between two or all three of these vowels before /r/ exists today in some varieties of Scots and Scottish Standard English, although some varieties also merge all three of these vowels before /r/. Possibly because vowel length and tenseness do not have the same relationship in Scots and SSE that exists in SBrE, the breaking and laxing of tense vowels before /r/ and the merger of lax vowels before /r/ did not occur in Scots and SSE until fairly recently, concurrent with changes in the articulation of syllable-rhyme /r/ (see McMahon 1996, 82-82).

[190]Wells Wells 1982, 368 reports loss of rhoticity in pre-consonantal environment, but retention of [r] before a pause. This suggests that /r/ was lost in a certain order. However, this order is not relevant to this discussion, hence we can capture /r/-deletion in one rule.

McMahon's re-interpretation of /r/ as [ə] in syllable rhymes highlights a very important aspect in the loss of rhoticity. The loss of rhoticity is not a 'loss' or the deletion of syllable-rhyme /r/. It is a change in the articulation of /r/ itself that constituted the initial change from rhoticity to non-rhoticity in SBrE. By acknowledging that /r/ itself began to change rather than positing epenthesis, "the original three, independent sound changes [can] be integrated into a single complex" (McMahon 1996, 81). An epenthetic [ə] (rule (37)) becomes redundant. The interpretation of (r) as [– consonantal] rather than being deleted in syllable rhymes would still have made pre-schwa laxing (rule (39)) obligatory and still resulting in centring diphthongs. The loss of rhoticity, then, is not a series of rules, but rather a change in the articulation of /r/ to [– consonantal]. More importantly, /r/ is not deleted to zero in syllable rhymes. Instead /r/ becomes vocalic. The interpretation of /r/ as [ə] also facilitates the introduction of intrusive-r into the phonology, to be discussed below.

With this interpretation, it can be postulated that surface [r] and [ə] are positional variants of the same underlying representation.

There is a complementary distribution in these two sounds. We see a consonantal [r] in syllable onsets but never in syllable rhymes. Conversely, we see a [ə] derived from /r/ in syllable rhymes[191].

(42) a.

$$/r/ \rightarrow \begin{cases} [r] \;/\; \begin{matrix} \text{On} \\ \perp \end{matrix} \\ [ə] \;/\; \begin{matrix} \text{Rh} \\ \perp \end{matrix} \end{cases}$$

b.

$$/r/ \rightarrow \begin{cases} [+\text{ consonantal}] \;/\; \begin{matrix} \text{On} \\ \perp \end{matrix} \\ [-\text{ consonantal}] \;/\; \begin{matrix} \text{Rh} \\ \perp \end{matrix} \end{cases}$$

The[192] symbol /r/ has, through general practise, become associated with a consonantal segment. However, the symbol /r/ is used simply as an expository measure, in preference to the 'melodic element' symbol /ø/ used throughout Giegerich (1999). Similar to the 'melodic element' of Giegerich (1999), though, is that the underlying representation of /r/ is minimally specified (see (Giegerich 1999, chapter 6)).

[191] There is an exception after low vowels, which will be discussed shortly.

[192] Both conditions of rule (42-a) are listed for the sake of explicitness even though this is not a normal practise within a generative framework.

(43) $\begin{bmatrix} + & \text{sonorant} \\ + & \text{continuant} \end{bmatrix}$

The underlying representation of rule (42-a) as exemplified in (43) is not specified for the feature [consonant]. The feature [consonant] only becomes specified through lexical and post-lexical phonological derivation and syllabification.

The pattern of a consonantal onset realisation and a vocalic nuclear realisation for (r) strongly parallels the two sounds that are traditionally classified as glides in English, [j] and [w][193]. These glides are found as consonants in syllable onsets, e.g. *yell, well, few, quick*. They are in complementary distribution with vocalic [ɪ] and [ʊ], which are only found in syllable rhymes (Giegerich 1992, 165), either as peaks, e.g. *bit, foot*, or as 'off-glides' in diphthongs, e.g. *buy, bow, boy*. The tense mid vowels /e/ and /o/ in SBrE and GA are pronounced (and often transcribed) with diphthongal realisations (see *EPD passim*) with [ɪ] and [ʊ] as part of their respective syllabic nuclei.

In ambisyllabic position[194], [ɪ] (or [ʲ]) is only realised after non-low, front, tense vowels, including diphthongs with a front off-glide:

	seeing, say it	[siːʲɪŋ]	
	laying, lay it	[leʲɪŋ]	
(44)	trying, try it	[traʲɪŋ]	
	boyish, boy is	[bɔɪʲɪʃ]	
	burying, bury it	[bɛrɪʲɪŋ]	(Giegerich 1999, 173)

Likewise, the back glide [ʊ] (or [ʷ]) is only realised after non-low, back, tense vowels, again, including diphthongs with a back off-glide:

	doing, do it	[duːʷɪŋ]	
(45)	showing, show it	[ʃoʊʷɪŋ]	
	allowing, allow it	[əlaʊʷɪŋ]	(Giegerich 1999, 173)

Even when not in ambisyllabic position, but only in syllable rhyme, [ɪ]/[ʲ] is associated with front vowels and [ʊ]/[ʷ] is associated with back vowels. The association can be seen in many transcription methods, such as the American structuralists (e.g. Trager and Smith 1951) and Labov. In the transcription convention of structuralists and Labov, most vowels are transcribed with digraphs. Non-low, front, tense vowels are transcribed with /y/[195], e.g. *see* /siy/, *say* /sey/; non-low, back, tense vowels are transcribed with /w/, e.g. *do* /duw/, *dough* /dow/.

The traditional glides [j] and [w] are realised as off-glides only after tense vowels, particularly, as seen in (44) and (45), before other vowels. Vocalic (r) can only follow lax

[193]There is an interesting parallel concerning the consonantal realisation in onsets and vocalisation in rhymes between /r/ and /l/ (cf. sections 4.2.1.2 and 4.2.1.4).

[194]See section 4.2.1.3 regarding the definition of ambisyllabicity

[195]Structuralist /y/ is equivalent to IPA /j/.

vowels. This brings vocalic (r) into some degree of structural complementary distribution with the off-glides [j] and [w] and further supports classifying (r) as a glide. However, the (r) off-glide is only realised after non-low lax vowels in present-day SBrE. As with the other two glides, the consonantal (r) off-glide tends to occur only before another vowel.

7.2.3 Low and Central Vowels

In present-day SBrE, there are three long monophthongs representing low and central vowels before historic (r). The central vowel [ɜː] only ever represents historically lax vowels before (r)[196] and only occurs in stressed syllables. Historically lax vowels centralised to [ə] before (r) (rule (40)) around the same time as syllable-rhyme (r) was being realised as [ə] (rule (38)).

Giegerich (1997) claims that modern SBrE /ɔː/ for historic /or/ ∼ /ɔr/ and modern /ɑː/ for historic /ɑr/ ∼ /ar/ used to be centring diphthongs based on reports from the turn of the 20th century (Sweet 1908, as cited in Giegerich 1997)[197]. This would further support the notion that syllable-rhyme (r) was realised as [ə] (rule (38)) and cast a small doubt over the epenthesis of [ə] (rule (37)). Giegerich interprets the present-day long, low surface monophthongs as being underlying centring diphthongs (Giegerich 1997; Giegerich 1999, 202ff., 226ff.). The low vowel diphthongs became long monophthongs during the 20th century through a process of smoothing. The same process of smoothing can be seen today affecting /ɛə/ (Cruttenden 2001, 144). This interpretation of long, low monophthongs as underlying centring diphthongs more readily allows for the formation of a natural class representing a vowel before historic (r).

Even with the underlying representation interpreted as a centring diphthong, the surface monophthongs brought about a merger of the THOUGHT lexical set with the NORTH/FORCE sets and the PALM set with the START set. While these surface monophthongs are what brought about the mergers, it is interesting that the underlying representations of the merged monophthongs are the (historic) centring diphthongs. The mergers introduced environments for a consonantal [r] to be realised where no (r) exists historically. It is because of the peculiarity of these mergers that modern SBrE and other non-rhotic varieties of English have intrusive-r. In fact, with very few exceptions – e.g. *idea*, *skua*, *Eritrea*, *boa* – intrusive-r only occurs with respect to the commA[198], THOUGHT[199] and PALM/START lexical sets.

[196] The word *colonel* is the sole exception of this generalisation.

[197] Additionally, the vowel of the THOUGHT lexical set was also a centring diphthong (Giegerich 1997), and still is in some accents of American English such as the accent spoken in New York City (Labov 1994, 202).

[198] Cf. lettER

[199] Cf. NORTH/FORCE

7.2.4 Intrusive-r and Liaison

7.2.4.1 Structure of Intrusive-r

With the loss of syllable-rhyme (r), either through deletion (41) or vocalisation (38), a phonotactic constraint on /r/ developed prohibiting the realisation of consonantal [r] in anything but syllable onsets. If we assume that (r) was deleted in syllable rhymes, then this phonotactic constraint realising consonantal [r] in syllable onsets is an inversion of the deletion rule (41) (Venneman 1972). In standard accounts of present-day SBrE (e.g. Wells 1982), intrusive-r and linking-r can both be realised in the following environments:

(46) $\emptyset \rightarrow [r] / \left\{ \begin{matrix} [ə] \\ [ɜː] \\ [Və] \\ [ɑː] \\ [ɔː] \end{matrix} \right\}$ ___ V (Giegerich 1999, 181).

The traditional distinction between intrusive-r and linking-r is that linking-r is associated with historic and orthographic (r) whereas intrusive-r is non-historic. Linking-r and intrusive-r might very well be the same phenomenon with the exception that intrusive-r never occurs after stressed [ɜː], since [ɜː] only ever represents an historic (r) sound, as reflected in the orthography[200].

There were two assumptions made in section 7.2.2. The first is that [ɜː] and [ə] are stressed and unstressed realisations, respectively, of /r/ in syllable rhymes. It was also assumed in section 7.2.2 that [ɑː] of START and [ɔː] of NORTH/FORCE are underlyingly centring diphthongs, /ɑə/ and /ɔə/, respectively. This brings START and NORTH/FORCE into a paradigm of centring diphthongs that includes NEAR, SQUARE and CURE, brought about through breaking and laxing of tense vowels before tautosyllabic /r/.

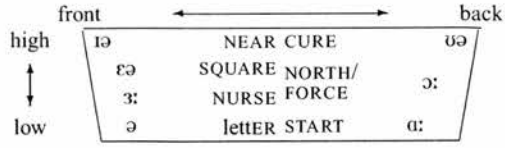

Figure 7.1: The distribution of syllable rhyme (r) in RP

In the 20th century, instead of an off-glide [ə], length has become realised after the low vowels [ɑː] and [ɔː] and, in some idiolects, [ɛː]. It will still be assumed, however, that the

[200] Again, with the exception of *colonel*.

underlying representations for these vowels remain centring diphthongs. If we accept these two assumptions, then we can re-formulate rule (46) as

(47) $\emptyset \rightarrow$ [r] / /ə/ ___V

where /ə/ represents the off-glide in the common underlying representation. This underlying representation may not necessarily be a mid central vowel (see Giegerich 1997; Giegerich 1999). For the purposes of current discussion, the actual form of the underlying representation is irrelevant and the notation of /ə/ is made out of convenience rather than for any theoretical purposes.

As was argued in section 7.2.2, above, [r] and [ə] can be posited as also sharing the same underlying representation. If this is accepted, then the insertion of [r] (46) is, in fact, spurious. Intrusive-r, as formulated in (46), is a rather convoluted epenthesis since all five of the governing environments do not readily form a natural class. But if [r] and [ə] are positional variants of the same underlying representations as postulated in rule (42-a)[201], then intrusive-r and linking-r are a result of post-lexical syllabification: before a vowel-initial word [r] is realised.

Earlier it was argued that Onset Maximisation assigns as many consonants as feasible to syllable onsets (see rule (21), chapter 4). The vocoid (r) cannot be followed by a consonant and also be in a syllable onset by virtue of the phonotactic constraints of English syllable onsets: *rC is an unacceptable onset cluster in English. If (r) is followed by a vowel, on the other hand, then some sort of onset capture can take place. English syllables require an onset. Vowel-initial words in isolation are often pronounced with a brief glottal stop, for example. In continuous speech, Onset Maximisation encourages vowel-initial words to have an onset (Giegerich 1999, 185-186). When (r) precedes a vowel, the obligation for an onset assigns (r) to that position, thus making (r) consonantal. However, the (r) that is captured by this onset obligation does not necessarily mean (r) is de-linked from the previous syllable rhyme (much like tapped /t/ in GA). Being in ambisyllabic position allows a consonantal [r] to be realised in the second syllable and a vocalic [ə] or a lax vowel to be concurrently realised in the first syllable (Giegerich 1999). The exact details of ambisyllabicity and how the phenomenon relates to the syllabification of (r) is beyond the scope that is intended for these introductory descriptions[202].

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[201] This does not take into account the reduced vowel [ə] as a realisation of vowels in unstressed syllables.

[202] The symbol "Ø" here represents a "melodic unit", which is effectively the same thing as the underspecified underlying representation of /r/ listed in (43) (Giegerich 1999, chapters 6-8). The example tokens in the following table are taken from (Cruttenden 2001, 289).

Lexical	*China is*	*murderer is*	*law/lore of*
Underlying Representation	/tʃaɪnØ/ + /ɪz/	/mØdØ/ + /Ø/ + /ɪz/	/lɔ:Ø/ + /əv/
(Lexical) realisation of (r) (42-a)	Rh ⊥ /tʃaɪnə/ + /ɪz/	Rh Rh ⊥ ⊥ /mɜ:də/ + /ə/ + /ɪz/	Rh ⊥ /lɔ:Ø/ + /əv/
Post-Lexical			
Onset Maximisation (21)	Rh On ∨ /tʃaɪnə + ɪz/	Rh On Rh On ∨ ∨ /mɜ:də + ə + ɪz/	Rh On ∨ /lɔ:Ø + əv/
(Post-lexical) realisation of (r) (42-a)	Rh On ∨ /tʃaɪnə r ɪz/	Rh On Rh On ∨ ∨ /mɜ:də r ə r ɪz/	Rh On ∨ /lɔ:r əv/

Table 7.2: Derivation of (r) in SBrE

7.2.4.2 Co-occurrence with Loss of Rhoticity

As an indication to the prevalence of intrusive-r, Jones cites an 1830 pamphlet by prescriptivist George Jackson (Jones 1989, 300-301). Jackson is critical of non-rhotic pronunciations, although by 1830 non-rhoticity was "probably fairly established in the phonology of some Souther British accents" (Jones 1989, 300). Jackson also criticises r-like pronunciations where no (r) existed historically according to the orthography. Such unetymological (r) pronunciations fall into two groups.

The first group consists of word-internal instances: "(darter) 'daughter', (dorn) 'dawn' and (sarsepan) 'saucepan'" (Jones 1989, 300). These pronunciations have since died out in modern SBrE[203].

The second group of unetymological (r) is at word boundaries: (drawr) 'draw', (dilemmer) 'dilemma', (feller) 'fellow'[204] (Jones 1989, 301). Such numerous examples suggest that 'intrusive-r' of some sort had also been established for some time. Criticism of intrusive-r can be dated back even earlier to 1762 (Cruttenden 2001, 288, fn. 9).

Jackson's criticism is interesting in that non-rhoticity and intrusive-r are treated with equal contempt. This suggests that the evolution of intrusive-r might have been concurrent with that of the loss of rhoticity. This further suggests that intrusive-r and non-rhoticity might be concomitant phenomena. Indeed, Cruttenden's earlier citation of intrusive-r adds credence to this possibility.

[203]However, I have heard in some speakers of GA, [wɔrʃ] as a pronunciation for *wash*. Also, Disney's Goofy often says "gawrsh" for "gosh", perhaps as a caricature of the GA accent in which *wash* is pronounced as [wɔrʃ].

[204]Cf. Abbott and Costello's 'other' baseball skit concerning contemporary baseball stars Bob Feller and Enos Slaughter

The occurrence of non-rhotic and unetymological (r) realisations word-internally and at juncture point to a merger by expansion. In section 6.3.2, a merger by expansion was defined as a merger of two underlying representations with the phonetic realisation of the new, merged underlying representation covering the range of the previous two underlyers (Labov 1994, 322-323). In the case of the THOUGHT ~ LOT merger by expansion in GA, for example, *caught* could conceivably have the value [ɑː] for its vowel as opposed to the expected [ɔː] and *cot* could have the value [ɔː] instead of [ɑː]. The realisations of the members of the merged THOUGHT ~ LOT set will range anywhere between [ɑː] and [ɔː], as was shown in the case study in section 6.4.3.

The same kind of wide-ranging phonetic realisation are possible regarding the merger of, say, [ɔr] and [ɔː]. According the Jackson, there is a non-rhotic [ɔː] vowel in (cawn) 'corn' at the same time as there is a rhotic realisation [ɔr] in (dorn) 'dawn' (Jones 1989, 300).

One of the potential results of a merger by expansion is that there are "allophonic distributions in appropriate areas of the new range" (Labov 1994, 323). There seems to be little doubt that the loss of rhoticity led to the mergers of such pairs as [ɔr] ~ [ɔː], [ɑr] ~ [ɑː] and [ər] ~ [ə]. The "allophonic distributions" in the case of these several mergers was the realisation of (r) as [+ consonantal] in onsets and [– consonantal] in rhymes. This thesis posits that the process of merging these vowels is responsible for the intrusive-r and linking-r sandhi phenomena as opposed to the supposition of an epenthesis rule that mirrors the loss of rhoticity. It is assumed that intrusive-r is caused by the realisational variation of (r) with respect to syllable location. Intrusive-r is, in part, the result of the merger of the THOUGHT ~ NORTH/FORCE sets, the START ~ PALM sets and the letter ~ commA sets. The combination of these mergers and the liaison of [r] in intervocalic position results in intrusive-r.

From Jackson's data, the seemingly inconsistent realisation of either member of these pairs strongly suggest that a merger by expansion is in progress: the phonetic realisations range within the union of the previously separate underlying categories. Eventually, a merger by expansion develops "allophonic distributions in appropriate areas of the new range" (Labov 1994, 322-323). The development of the allophony – or contextual variation – can be seen in modern SBrE: the 'rhotic' variants have become realised (inconsistently) before a vowel; the 'non-rhotic' variants have become realised before consonants and pauses. However, some accounts of modern SBrE assume intrusive-r is caused by an insertion process (46). This brings us to present-day SBrE, and these accounts are discussed presently.

7.3 Present-day Analysis

7.3.1 Modern Received Pronunciation

There are two general approaches to describing non-rhoticity in SBrE. The first is to assume that SBrE is underlyingly rhotic, and that epenthetic breaking, subsequent laxing and then pre-consonantal deletion of (r) are part of the present-day synchronic phonology. This approach will be referred to as the 'diachronic approach'. This approach requires at least three rules to be a part of the phonology of (r). At the same time, centring diphthongs do not form part of the underlying system of categories.

The second approach, called the 'synchronic approach', is to assume that SBrE is underlyingly non-rhotic. The results of historical changes have phonologised the centring diphthongs, making them a permanent part of the underlying inventory.

Both approaches require a rule similar to (46) in order to account for intrusive-r. Neither approach, as they will be presented, considers /r/ becoming schwa directly rather than through a series of changes. However, this will be addressed after both main approaches have been presented.

7.3.1.1 Diachronic approach to modern non-rhoticity

The diachronic approach to modern SBrE's non-rhoticity is akin to the SPE assumption that the underlying phonology of all present-day English speakers is broadly the same as it was in Middle English. This assumption implies that the differences between rhotic and non-rhotic dialects are due to differences in the rule systems of the respective varieties (see, for example, King 1969; Kamińska 1995). The differences on which this thesis concentrates, at least with respect to rhoticity, would be due to differences in the rules deriving the surface forms.

The diachronic approach has some merit. As GA is truly underlyingly rhotic (see below), the acquisition of non-rhoticity would simply be following historical patterns. Indeed, it will be argued below that only r-deletion (41) and r-insertion (46) differ between the two varieties today. Additionally, the diachronic approach – or at least the inclusion of breaking (37) and laxing (39) in the present-day synchronic phonology – can account for the realisation of adjacent centring diphthongs and consonantal [r] in words like *cereal* and *fury* (Giegerich 1999, 232-233). The diachronic approach also readily accounts for linking-r, e.g. *fearing*, *soaring*, *square off*.

However, the diachronic approach does not sufficiently account for intrusive-r. It assumes that /r/ is deleted before consonants and pauses (41). After breaking and laxing, this means that an underlying /r/ is deleted after [ə], [ɜː], centring diphthongs, and the low vowels /ɔː/ and /ɑː/ (whose status as underlying diphthongs is not considered in this approach) before consonants and pauses. The underlying /r/ is still realised before vowels, and a distinction is made between linking-r and intrusive-r. For intrusive-r, an [r] is inserted after [ə], [ɜː], centring diphthongs and the low vowels /ɔː/ and /ɑː/ but before another vowel; basically, rule (46). Essentially, this is an analogy to linking-r, where (historic) [r] occurs before vowels by being virtue of being exempt from deletion.

If this seems a bit repetitive, it is because the insertion rule

(48) $\emptyset \rightarrow [r] / \underset{\perp}{\text{On}}$

is a mirror image of the deletion rule

(49) $[r] \rightarrow \emptyset / \underset{\perp}{\text{Rh}}$

in complementary environments: deletion (49) occurs in syllable rhymes; insertion (48) occurs in syllable onsets. Diachronically, this would be treated as a rule inversion (Venneman 1972). In this approach, though, both rules are present in the 'synchronic' phonology. This is something of a drawback. One rule – insertion (48) – effectively reverses the output of a previous rule – deletion (49) – yielding a 'net gain' of zero in terms of ultimate output (Giegerich 1999, 178). Neither phonology, phonological universals nor other aspects of the grammar enforce the mirror images. It would be a simpler grammar if neither rule or only one of the two rules were a part of the phonology rather than having both present and counteracting each other. Additionally, there is no motivation, synchronically, of why [r] is inserted rather than [j], [w] or [l][205].

Another fault with this approach is the variable nature of r-sandhi. It has been assumed that intrusive-r and linking-r are separate processes. The speech-conscious make an effort to suppress intrusive-r. In so doing, linking-r can also become suppressed (Wells 1982, 224). Obviously there is a link between intrusive-r and linking-r. More importantly, there is no phonological reason why linking-r should be suppressed. In fact, under this approach, linking-r should be obligatory. There is no following consonant to force /r/ to be deleted because it is in a syllable-rhyme.

[205] In section 7.2.2 it was argued the [j] and [w] are already realisations of other vowels. However, there is still no motivation for [r] to be inserted instead of [l] since both liquids share many of the same features.

This approach assumes that the THOUGHT, PALM and commA sets are underlyingly distinct from the NORTH/FORCE, START and lettER sets, respectively. The homophony of certain members of, say, the THOUGHT and NORTH/FORCE set, is due to the application of r-insertion (46) in *saw*[r]*ing* and the non-application of r-deletion (41) in *soaring*. In other words, since r-deletion only occurs synchronically, there was never a diachronic merger of THOUGHT with NORTH/FORCE, PALM with START or lettER with commA.

7.3.1.2 The synchronic approach to non-rhoticity

A second approach to account for modern SBrE's non-rhoticity assumes that the results of the historical rules listed above have become phonologised and that present-day SBrE is underlyingly non-rhotic. With the deletion of nonprevocalic /r/ (41), there was no longer a conditioning environment to evoke the centring diphthong realisations, or the central vowels [ɜː] and [ə], yet all of these realisations continued to surface. The loss of a conditioning factor is one way that new categories are introduced into a language's phonology (O'Grady, Dobrovolsky, and Katamba 1996, 328).

SBrE, like other varieties of English, including GA, has long and short monophthongs – /iː/ ∼ /ɪ/, /eː/ ∼ /ɛ/, /uː/ ∼ /ʊ/, etc. – and the diphthongs /aɪ/, /aʊ/ and /ɔɪ/ in the inventory of underlying vowels. This can be considered SBrE's primary vowel system. The new sounds that were phonologised by the loss of (r) form a secondary set of categories in SBrE. The centring diphthongs /ɪə/ NEAR, /ɛə/ SQUARE and /ʊə/ CURE and the central vowel /ɜː/ NURSE are all members of this secondary system. Other members of the sub-system are /ɑː/ START ∼ PALM ∼ BATH, /ɔː/ NORTH/FORCE ∼ THOUGHT and /ə/ commA ∼ lettER. These latter vowels also function as part of the primary vowel system.

With the phonologisation of the centring diphthongs and the low and central vowels, a phonotactic constraint prohibiting the realisation of [r] in anything but syllable onsets has developed along with the inversion of r-deletion (Venneman 1972). This eventually has become r-insertion (46). This mirror image is tolerable because r-deletion is no longer part of the phonology. Instead of two rules with one reversing the output of the other in the synchronic phonology, there is only one rule reversing historical output.

The deletion of (r) made the [ə] in the lettER and commA sets indistinguishable. Also, the deletion of (r) and subsequent smoothing made the vowels of the THOUGHT and PALM sets indistinguishable from the NORTH/FORCE and START sets, respectively. With these mergers, there is no way to determine, based on the phonology alone, the presence or absence of

historical (r). This means that when r-insertion (46) is invoked, there is no recourse to history, and linking-r and intrusive-r are phonologically identical. A speaker has recourse to their literacy, which can affect the suppression of intrusive-r.

Compared with a rhotic variety, the diachronic approach posits a much more complicated derivational and realisational system for SBrE. The synchronic approach posits a larger system of underlying representations for SBrE than in rhotic varieties. The choice of which approach is preferable depends on one's theoretical perspective.

7.3.1.3 Alternative approach to non-rhoticity

Both of the approaches detailed so far are based on the assumption that Early Modern English syllable-rhyme /r/ caused breaking (37), laxing (39) and the merger of previously lax vowels (40). Subsequently, (r) was then deleted in syllable rhymes (41). The main difference between the two approaches is whether or not these historical changes are part of the present-day synchronic phonology. Neither approach considers [r] becoming schwa directly (38) rather than by way of epenthesis and deletion.

It was argued above that (r) has many parallels with the traditional glides (j) and (w). The strongest similarity is that all three of these segments are [+ consonantal] in syllable onsets - e.g. *rye*, *yell*, *weed* – and [– consonantal] in syllable rhymes – e.g. *hear*, *bird* and the examples listed in (44) and (45) above. So (r), along with the other two glides, have the following distribution (Giegerich 1999, 173):

(50)
$$\begin{bmatrix} + & \text{sonorant} \\ + & \text{continuant} \end{bmatrix} \rightarrow \begin{matrix} [+\,\text{consonantal}]\,/ & \begin{matrix}\text{On}\\ \perp\end{matrix} \\ [-\,\text{consonantal}]\,/ & \begin{matrix}\text{Rh}\\ \perp\end{matrix} \end{matrix}$$

The features [anterior] or [back] combined with [coronal] distinguish the three glides from each other.

The change in the nature of (r) to a [– consonantal] [ə] in syllable rhymes eventually brought about the merger with [ə] of other lenition processes (i.e. the commA lexical set). It is assumed that the [– consonantal] (r) following /ɑː/ and /ɔː/ brought about the merger of (historic) /ɑr/ with /ɑː/ and (historic) /ɔr/ with /ɔː/. In this alternative approach, there is no need to posit an r-insertion rule: intrusive-r and linking-r are the same process. This post-lexical process is governed by syllabification.

The major difference between the diachronic approach and the synchronic approach is whether or not [r] and [ə] are underlyingly distinct for the lettER and commA sets, as well as /ɑː/ of PALM and START or /ɔː/ of THOUGHT and NORTH/FORCE. With (r) becoming [– consonantal] directly in rhymes, the synchronic approach still has more underlying categories and the diachronic approach still has more rules. The difference between the two approaches here is if the underlying representation of (r) is specified for consonantality in the input of (42-a) or (50).

In this thesis, and for the analysis that follows, it will be assumed that [ə] and [r] are positional variants of the same underlying representation (42-a) in SBrE. It will also be assumed that the [ə] of the lettER set and the [ə] of the commA have the same underlying representation, unspecified for the feature [consonantal]. In other words, the lettER set and the commA set have become merged because of the change in the consonantal nature of syllable-rhyme (r). Additionally, it is assumed that the START set became merged with the PALM set and the NORTH/FORCE set merged with the THOUGHT set because of the same change in syllable-rhyme (r).

It is further assumed that there is no insertion rule. This means that linking-r and intrusive-r are the same phenomenon. This phenomenon is governed by the syllabification of (r), as seen in rules (42-a) and (50). If (r) is in ambisyllabic position – that is, in both the coda of one syllable and the onset of the following syllable – then, by virtue of being in a syllable onset, a consonantal [r] can occur.

The assumption that (r) is [– consonantal] in rhymes and [+ consonantal] in onsets allows for an easier comparison to GA. This assumption also facilitates explanation on the acquisition of (r) by both native Southern British English speakers and by General American speakers.

7.3.2 General American

General American is a rhotic variety of English. A rhotic variety is one that pronounces /r/ as a retroflex segment in syllable rhymes, such as is defined in the very first sentence of this chapter. So, for example, in the NURSE lexical set, an r-like sound surfaces in the syllable rhyme: a rhoticised mid-central vowel [ɝ] (Wells 1982, 137; Giegerich 1992, 65). Giegerich (1992, 65), Wells (1982, 137ff.) and the EPD all posit the underlying form as two separate sounds /ɜ/+/r/ (disregarding notations of length) and suggest that the vowel assimilates the retroflexion. The justification for positing two underlying sounds stems from the above definition of 'rhotic': that is, /r/ is realised as [r] in syllable rhymes.

However, it is possible to posit a single underlyer. Kenyon states that the "spelling of words like *hurt*, *stir*, etc. suggests a vowel followed by r, but in this case the *r* sound is itself the vowel" (1994, §305). Kahn also notes that for the NURSE set "there is no portion of the syllabic nucleus that is not retroflex" (1980, 151). Additionally,

> there is no acoustically distinct consonant area in the region of /ɚ/, and, therefore, in a strictly concatenative-segmental analysis, we must consider this sound as part of the American English vowel system (Olive, Greenwood, and Coleman 1993, 104).

GA (r) becomes a [– consonantal] [ɝ] in stressed syllable rhymes, and [ɚ] in unstressed syllable rhymes. The [– consonantal] [ɝ]/[ɚ] is the vowel, itself. This parallels Giegerich's (1999) treatment of SBrE (r). One difference between SBrE and GA (r) is that GA (r) is retroflex in syllable rhymes, whereas SBrE (r) is not. Another difference is that GA (r) is always [+ coronal].

(51) /r/ → [r] / On ⊥ ; [ɚ] / Rh ⊥

Kahn (1980, 148-151) argues that GA /r/ is a glide. He draws many parallels in articulation and distribution of GA /r/ and the incontrovertible glides or semi-consonants /j/ and /w/. One characteristic of a glide is that "at no time during its articulation is there any obstruction" (1980, 149) as compared to stops, fricatives and affricates. The /r/ sound – the retroflex alveolar approximant – has very little obstruction. The acoustic similarity between [ə] and [r] in SBrE that McMahon (1996, 80) discusses is even more pronounced between the GA retroflex vowel [ɚ] and [r] where "the only difference is amplitude" (Shockey, p.c.).

Another characteristic of glides is that they are consonantal in syllable onsets and vocalic in syllable rhymes (see rule (50) and section 7.2.2 above). GA /r/ meets the criterion of a glide. In syllable onsets "the retroflex [r] typically functions as a consonant while at the peak of a syllable, it appears to function as a vowel" (Wolfram and Johnson 1982, 21). As with the glides /j, w/, there is little doubt as to the consonantal realisation of /r/ in words like *read* and *write*. As the peak of a syllable, e.g. the NURSE and lettER sets, the spelling suggests a vowel followed by [r] (Kenyon 1994, §305) and is represented as such phonemically in the EPD, Giegerich (1992, 65) and Wells (1982, 137ff.). However, Kenyon persists that "the *r* sound itself is the vowel" (1994, §305) and Kahn (1980, 151) insists that *burn* must be transcribed as [bɻn] or, more conventionally as [bɝn]. Indeed, Giegerich (1992) and Wells (1982) transcribe the surface representation of this sound as a single, rhoticised mid-central vowel [ɝ] in stressed

syllables or [ɚ] in unstressed syllables. Thus, the realisation of /r/ parallels the realisations of /j, w/ as the peaks of syllables. At this point, it can be postulated that [r], [ɚ] and [ɝ] are all variants of the same underlying representation in GA. Giegerich (1999) makes these very same comparisons between SBrE (r) and the glides /j, w/. Giegerich postulates that in SBrE [ə] and [r] are positional variants of the same underlying representation (see above). Giegerich also argues that [j] and [i] are positional variants of the same underlying representation – as are [w] and [u] – based on their phonetic similarity and complementary distribution, an assumption followed in this thesis, as well. In the NURSE and lettER lexical sets, /r/ – or whatever the actual underlying representation may be – has become the only vocoid in the syllable rhyme. The realisation of this vocoid, [ɝ] or [ɚ], is a single sound. For the remainder of this thesis, the (r) of the NURSE and lettER lexical sets will be referred to as monophthongal (r).

In conventional transcription of GA syllable-rhyme /r/, like the other glides, /r/ can only occur after tense vowels within the same syllable (Kahn 1980, 151) . Kahn states that "tense vowels are not diphthongized before the glide /r/ in monosyllables" (1980, 121). Yet, if syllable-rhyme /r/ is realised as [– consonantal], as Kahn himself suggests (1980, 148-151, 120ff.), then the tense vowel plus /r/ sequences should be, by definition, a diphthong. Indeed, Kenyon devotes several paragraphs to 'R-diphthongs' (1994, §§352-376).

In GA, as well as in SBrE, tense vowels are redundantly long. As was mentioned in section 7.2.1 long vowels cannot occur with another [– consonantal] in the same syllable nucleus[206]. So, another characteristic of these tense vowels plus /r/ diphthongs is that the onset vowel surfaces as lax (Kenyon 1994). This is similar to the laxing rule (39) introduced earlier because of the presence of two [– consonantal] elements in a syllable rhyme.

The result of the laxing of tense vowels before [– consonantal] syllable-rhyme (r) is a series of centring diphthongs. This parallels exactly with the SBrE centring diphthongs, mentioned above. The underlying status of these diphthongs is worthy of a discussion that is beyond the scope of this thesis. It will be assumed that these diphthongs are in the phonic inventory of native GA speakers. Upon exposure to non-rhoticity, these diphthongs along with monophthongal (r) of NURSE and lettER are affected, regardless of their underlying status.

These diphthongs and the vocalic nature of syllable rhyme (r) suggest that the predecessors of GA and SBrE probably shared some historical changes to (r) before the decisive split. It is possible that both varieties shared breaking and laxing (rules (37) and (39), above), but there was no deletion of nonprevocalic /r/ in (proto-)GA. It is more likely that syllable-rhyme

[206] According to this constraint, then, the onsets of the diphthongs [eɪ] and [oʊ] are not long. However, the diphthongs as a unit are considered long, mapping to the [+ tense] of the underlying /e/ and /o/.

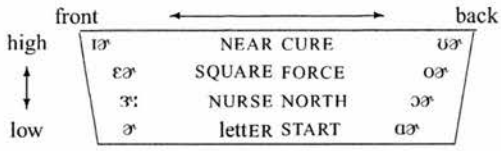

Figure 7.2: The distribution of syllable rhyme (r) in GA

(r) began to undergo phonetic vocalisation in the shared predecessor of both varieties. In proto-SBrE, the vocalisation led to [ə], and subsequent mergers with the [ə] output of other vowels. In GA, the result of the initial vocalisation of (r) in rhymes the result was a retroflex approximant with vowel-like qualities.

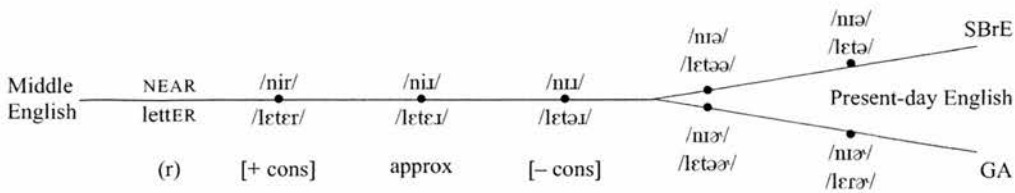

Figure 7.3: Possible evolution of (r) in SBrE and GA

If a shared historical change to [– consonantal] is to be assumed, then the major difference between SBrE and GA lies in the setting of the [coronal] feature in syllable-rhyme (r). The non-rhoticity of some varieties of American English lends support to the idea that a weakened, possibly [– consonantal] syllable-rhyme (r) was a part of most varieties of colonial American English, including the predecessor of modern GA.

Comparing Kahn (1980) and Giegerich (1999), the difference between SBrE and GA nuclear /r/ is mostly a matter of the retroflexion of the realised vocoid. That is, in SBrE, [ə] is [– coronal] and in GA, [ə˞] is [+ coronal], yet both realisations belong to the same, or at least related, underlying representations. The arguments of both Kahn and Giegerich state that a consonantal or vocalic realisation of (r) depends on syllable position. It was mentioned above that if SBrE is underlyingly rhotic, then "the difference between rhotic and non-rhotic varieties of English is a mere surface phenomenon" (Giegerich 1997, 44, fn.18)[207]. Following

[207]Giegerich (p.c.) is referring to Kamińska's (1995) argument in which non-rhotic RP is compared to rhotic Scots and Scottish Standard English. The major difference between the rhoticity of GA and the rhoticity of SSE is that /r/ is always [+ consonantal] in SSE, although this appears to be undergoing change (Romaine 1978).

the arguments of Kahn and Giegerich, the underlying representation of (r) is the same in both varieties except that the feature of [coronal] is specified in GA[208].

(52)
$$\begin{bmatrix} + & \text{sonorant} \\ + & \text{continuant} \\ (+ & \text{coronal}) \end{bmatrix}$$

Most importantly in that underlying representation, there is no specification for the feature [consonantal]. It is argued, though the different treatment of (r) in both varieties is, in fact, more than a "a mere surface phenomenon".

In a phonemicist framework, the difference between rhotic and non-rhotic can be claimed to be phonemic in that each dialect has difference phonemes for (r), e.g. / ɪə/ (SBrE) and /ɪr/ (GA) for the NEAR lexical set. What distinguishes rhotic from non-rhotic in the generative framework assumed in this thesis is the underlying specification of [coronal]. In rhotic GA, /r/ is underlyingly [+ coronal] and always surfaces as [+ coronal] even in syllable rhymes where /r/ is [– consonantal]. In SBrE, [coronal] only has a positive value in syllable onsets. As was stated in the first sentence of this chapter, "a rhotic dialect is defined as one in which [r] – or some retroflex sonorant variant such as rhoticised schwa [ɚ] – is permitted in syllable rhymes".

Most of the discussion of GA (r) has been based on /r/ being before consonants and pauses. Most of the data collected for (r) fall into this general category. There has been little interest in intervocalic (r) – that is, linking-r and intrusive-r – in GA simply because GA is rhotic. It seems likely that (r), along with other consonantal segments, such as /t/, is subject to changes during the syllabification process. So in intervocalic position, GA (r) may be captured by Onset Maximisation, but at the same time, (r) might exert its centring influence from the syllable rhyme. In other words, intervocalic (r) might be ambisyllabic. It is assumed that syllabification with respect to (r) is the same in GA as it is in SBrE (as described in Giegerich 1999, chapters 6-8).

In SBrE, the change to vocalic (r) in syllable rhymes brought about several mergers, such as that of the lettER and commA lexical sets. Additionally, the loss of any surface realisation of syllable rhyme (r) after the low vowels /ɔ:/ and /ɑ:/ resulted in the merger of the THOUGHT set with the NORTH/FORCE set and the START set with the PALM set.

By not losing a retroflex surface representation of syllable rhyme (r), GA did not merge the vowels represented by the THOUGHT and NORTH/FORCE sets, the START and PALM sets

[208] In SPE, both /r/ and /l/ are [+ coronal]. In SPE, /r/ is distinguished from /l/ in that /r/ is [– anterior] and /l/ is [+ anterior] (SPE, 176-177). However, every other alveolar consonant is [+ anterior] in SPE and /r/ is an alveolar approximant. In this thesis, [coronal] is used to distinguish /r/ from other vowels and glides. It is assumed in this thesis that some central/lateral feature would distinguish /r/ from /l/.

or the letter and comma sets. Because these mergers did not develop in GA, neither did intrusive-r. In this thesis, linking-r and intrusive-r are considered to be related phenomena in SBrE. Intrusive-r and, by association, linking-r are often "systematically confined to non-rhotic varieties of English" (Giegerich 1999, 168). However, this phenomenon is the result of syllabification and liaison. In intervocalic position, tautomorphemic /r/ should be assigned to the onset of the second syllable by virtue of Onset Maximisation (rule (21), above). Yet in "open syllables before /r/, many dialects of (American English) have merged /ey/, /e/, /æ/, and even /ʌ/, as in *Mary*, *merry*, *marry*, and *Murray*" (Labov 1994, 243)[209].

Because the first syllables of these tokens are all stressed, it is possible that the Coda Capture (rule (13), above) is being invoked and the /r/ becomes ambisyllabic. Alternatively, /r/ is not being de-linked from the previous rhyme after Onset Maximisation. It has been shown that syllable rhyme (r) historically has caused the merger of the lax vowels. By remaining in syllable rhyme in *Mary*, *merry*, *marry* and *Murray*, /r/ is continuing to have a centralising effect.

By saying that GA is rhotic, it is normally assumed that GA /r/ can be realised as [r] in onsets and rhymes, much like any other English consonant. However, rhoticity in GA is not as simple as that, as has been demonstrated. A vocalic realisation of (r) and rhotic centring diphthongs are presented in order to show the similarities in the overall phonological structures between SBrE and GA. A vocalic (r) also means that the jump from rhotic to non-rhotic or *vice versa* need not necessarily entail the acquisition or loss of breaking, laxing, deletion and smoothing[210]. Such a presentation facilitates discussion of the interdialect phonology of (r).

7.4 Interdialectal Analysis

There were sixty-two opportunities to produce a D2 realisation of (r). There were five additional opportunities in the picture cards, depending on which lexical item the participant uttered. For example, if the participant said 'purse' for item 31, then an opportunity for (r) was taken, but if the participant said 'handbag', the utterance was ignored with respect to rhoticity.

The elicitation of (r) was obtained from the items listed in table 7.3.

The items in the first part of table 7.3 are categorised into two groups. One group represents syllable nuclei in which only a mid-central vowel – stressed [ɜː] or [ɜ:], or unstressed [ɚ] or [ə] – can be realised. In other words, the first group represents the NURSE and letter lexical

[209] Labov /ey/ = IPA /e/, Labov /e/ = IPA /ɛ/

[210] Though it does entail changing one of the distinctive features of the underlying representation.

Word List	Picture Cards	Reading Passage
spring and summer	13-scissors	eternity
north and south	14-(cooker)	thought occurred
urban and rural	18-corn	order
the Earl of Erol	23-yogurt	worth
metal and plaster	24-pushchair/stroller	monster swallows
monarchy and anarchy	26-high chair	Earth
hot water bottle	31-(purse)	version
a partridge in a pear tree	32-sweater/jumper	better
birthday greetings	33-(trousers)	over
forty brass monkeys	34-slipper	car
the bird sat on the kerb with fur	35-(rubber boots)	so together
the prettiest girl in the class	36-(plaster)	theatre
Michael the archangel	39-teddy bear	their tickets
		popcorn
	Numbers 13, 30-39	mineral water
	Numbers 14, 40	preferred
		monster
		burned
		army
		door
		water
		formed
		herself
sofa and couch		idea of seeing Nessie
painting and drawing		idea of seeing the movie
Cuba and France		cinema instead of
Lisa and Daniel		
rotten, raw eggs		

Table 7.3: Elicitation tokens for (r) and intrusive-r

sets. The second group – those items that are indented in the list – represents syllable nuclei in which the expected output is either a centring diphthong or a long, low monophthong: the NEAR, CURE, SQUARE, NORTH/FORCE and START lexical sets. Initially, there was no empirical reason for listing the two groups separately. However, the data show some interesting variation with respect to whether or not (r) is the only vocoid in the syllable nucleus, so the divided list illustrates which tokens represent monophthongal (r) and which represent centring diphthongs or low vowels.

The elicitation of intrusive-r was obtained from the items listed in the second part of table 7.3. There were eight opportunities to produce intrusive-r.

GA (source)	RP (target)
ɪəˠ	ɪə
ʊəˠ	ʊə
ɛəˠ	ɛə or ɛː
ɔəˠ, oəˠ	ɔː
ɑəˠ	ɑː
əˠ	ə
ɜˠː	ɜː

Table 7.4: Source and target vowels in acquiring SBrE non-rhoticity

7.4.1 Americans in Britain

In GA, syllable-rhyme (r) is [+ coronal] whereas SBrE syllable-rhyme (r) is not. This could be considered a realisational difference between the two varieties, although underlyingly, [+ coronal] is specified in the underlying representation of GA (r) but not in SBrE. The loss of rhoticity resulted in the merger of several lexical sets in SBrE: letter and comma; NORTH/FORCE and THOUGHT; START and PALM/BATH (see 7.2.3). These six lexical groups remain distinct in GA. The centring diphthongs in SBrE are usually considered single underlying representations whereas the GA counterparts are considered the cluster of a tense vowel followed by /r/. The difference in the underlying inventories of categories, then, presents a rather large-scale underlying difference between the two dialects.

Unlike the other phonological features that have been examined – tapping, the front or back realisation of the BATH vowel, the merger or distinction of the THOUGHT and LOT vowels – there were no 'intermediate' responses for the GA speakers acquiring non-rhoticity. There were no individual tokens that were between the [ɹ]/[ɜˠː]/[əˠ] of GA and the [ə] or lengthened monophthong [ɜː] of SBrE, either as the only occupant of a syllable nucleus, or when there was a vowel preceding (r) in the rhyme. There were no 'in-between' variants as there were for the other phonological phenomena examined because "even a little bit of rhoticity is easily detected" (Shockey, p.c.).

Two participants show no change towards becoming non-rhotic: BB and AF. In the other phonological features, these two participants showed very little change, so the maintenance of full rhoticity is unsurprising. What is surprising is that that participant AF was born in England. There is no doubt that the participant was accommodating towards the interviewer. Additionally there is no doubt that portions of the local London variety have been integrated into his idiolect. This is evidenced by the fronting of the first element of a diphthongal realisation of /o/ in twenty out of twenty-one cases. With no non-rhotic utterances in this highly formal setting, it is possible that even in his 'playground' register there are still some

rhotic realisations. It is also possible that this participant is fully bi-dialectal, an issue that will be addressed later. The lack of acquisition of non-rhoticity is reminiscent of Payne's (1980) results in which certain participants born in the Philadelphia to out-of-state parents failed to acquire the Philadelphia pattern of short-*a*.

There were three participants that produced only one non-rhotic token each. Two of the tokens were *yogurt* (eb.pc) and *hot water bottle* (nf.wl). In both of these cases, (r) is in an unstressed position. The non-rhotic realisation of these two tokens is an extension of the tendency in English of realising unstressed syllables with the reduced vowel [ə]. The third token is *worth* (kn.rp). The (r) of this word receives lexical stress. All three tokens thus far represent monophthongal (r).

In addition these three single tokens, one participant produced three non-rhotic realisations: *birthday greetings* (cc.wl), *worth* (cc.rp) and *so together* (cc.rp). As with the three that show hardly any change, the same underlying monophthongal (r) is being affected. It is interesting to note that participant CC was thirty-two years old when she arrived in the UK.

Participant JOP produced eight non-rhotic realisations. All of these were elicited from the reading passage. One of the tokens was from the phrase *their tickets*. The word *their* is susceptible to phonetic reduction, usually when followed by a vowel (EPD, 493). In this case, *their* was pronounced with a centring diphthong [ɛə] since it was followed by a consonant. This is the only instance where (r) is not the only underlying element in the nucleus. For the remaining seven tokens, there was only one vocoid in the syllable rhymes: *eternity, worth, monster, version, over, together, water*. In three of these, the syllable containing (r) receives lexical stress. The other four non-rhotic realisations are in unstressed syllables.

The last participant to exhibit some non-rhotic realisations without demonstrating complete acquisition produced ten non-rhotic utterances. Two of these tokens were from reading the numbers '14' and '40' (rop.pc) from the picture cards. The remaining eight tokens had only (r) in the syllable nuclei. Of these eight, only one token was uttered with primary lexical stress: *urban* (rp.wl). There were five tokens with secondary stress. These were all from the numbers being read in the picture cards: '13', '35', '36', '37', '38' (rop.pc). Two tokens were in unstressed position: *jumper*, *trousers* (rop.pc). Again, there is variation in the stress of these non-rhotic realisations, but there seems to be a tendency for syllables containing monophthongal (r) that do not receive primary stress to undergo change faster.

There is a tendency for the unstressed realisation of GA (r) [ɚ] to have a higher rate of change. In general, unstressed syllables have reduced vowels whereas stressed syllables have

full vowels, e.g. *atom* ['ærəm] and *atomic* [ə'tɑ:mɪk] (Giegerich 1992, 68f.). Clearly it can be seen that stress placement determines whether or not a vowel is reduced. The reduced vowel [ə] tends to be found in unstressed syllables. Even with the two closely related words *atom* and *atomic*, we can see that [ə] is a realisation of two different underlying full vowels, /æ/ and /ɑ:/.

It was discussed earlier that [ɹ] shares many properties with [ə], both acoustically and in articulation. The de-rhoticisation of [ɚ] to [ə] in unstressed syllables was possibly one of the first steps in the historic loss of rhoticity in SBrE. De-rhoticisation in this environment is a relatively natural progression in that it is an extension of a pre-existing processes reducing vowels to [ə] in unstressed syllable rhymes.

The interaction between stress and non-rhoticity is only a vague tendency. Such an interaction accounts for the higher proportion of unstressed monophthongal (r) becoming non-rhotic. If there is such an interaction, then it is possible that the acquisition of non-rhoticity begins as a realisational difference: one surface realisation of (r), [ɚ], becomes more D2-like [ə] without affecting the whole distribution of the underlying representation.

More important than the role of stress is the observation that only one underlying representation is affected in the beginning stages of the acquisition of non-rhoticity[211]. From all of the data presented up to this point, we can conclude that the acquisition of non-rhoticity begins with changes to /r/ when it is the only vocoid in a syllable rhyme. At first glance, this is unsurprising: the standard definition of rhoticity is based on the presence or absence of /r/ in syllable rhymes. The standard definition encompasses centring diphthongs and the low monophthongs as well as (r) itself. But the data of the participants who demonstrate minimal change show *only* (r) itself changing. There is clearly a progression in the acquisition of a non-rhotic system.

The (r) phone is the second element of the rhotic centring diphthongs. Although diphthongs are composed of two elements, they function as a single unit. Before the unit can change, one of the composite elements, in this particular instance (r), must change first. If a non-rhotic realisation has not been associated with monophthongal (r), then there is no motivation for the (r) of larger units – the centring diphthongs – to undergo change.

This raises the question about how a new realisations becomes associated with a given underlying representation. It has been argued that in dialectal change in the acquisition of phonology of a second dialect follows an S-curve (Chambers 1992). Change and acquisition

[211] It was argued in sections 2.2.1 and 2.7.3.5, as well as throughout chapter 4, that in this thesis every interdialectal change is a form of acquisition. Any 'elimination' or loss or disabling comes as a direct result of the acquisition of – or the attempt to acquire – a dialectal difference. Thus, the loss of rhoticity by native GA speakers is referred to as the acquisition non-rhoticity, even though in effect, these are the same things.

are slow and sporadic for the first twenty percent of possible instances of a given feature. After 20% or so of the potential realisations are uttered in a D2-like pronunciation, there is a rapid acquisition until about 80% of the instances of a given feature are more like the second dialect, or at least no longer like the first dialect. The evidence of this can be seen by the fact that there are very few participants who produce between 20% and 80% of any given feature in this study and in Chambers[212].

None of the participants discussed thus far have shown more than 20% change towards non-rhoticity. However, (non-)rhoticity is a complex system, as we can see with centring diphthongs beginning to change only after monophthongal (r) has had a non-rhotic realisation associated with it. In the elicitation devices, there are between 44 and 50 potential realisations of monophthongal (r), disregarding stress. The variation in numbers is dependent on the responses given for the picture cards. Between eight and ten D2 utterances of monophthongal (r) would constitute 20%.

Only two participants produced non-rhotic centring diphthongs. Participant JOP uttered eight non-rhotic realisations, seven of which represented monophthongal (r). Participant ROP produced ten non-rhotic utterances, eight of which represented monophthongal (r). It would appear that a 'critical mass' nearing 20% has been reached for (r) when (r) is the only vocoid in a syllable rhyme. Perhaps this is enough to associate a non-rhotic realisation with monophthongal (r). Once this critical mass has been reached and there is an associated non-rhotic realisation, (r) in other environments – namely as the off-glide in centring diphthongs – becomes susceptible to further idiolectal change.

Any change to centring diphthongs can only happen after a significant amount of change has occurred in monophthongal (r). It is possible that the trend of there being more D2-like realisations of monophthongal (r) continues until after the acquisition of non-rhoticity reaches the 80% point.

One participant who has acquired more than 80% D2 realisations of (r) still produced two rhotic realisations: *anarchy* (mn.wl); *archangel* (nm.wl). Both of these tokens have a low vowel+(r) nuclear sequence.

A second participant who demonstrated non-rhotic realisations in over 80% of the potential utterances is EMB, who participated in the pilot study (see 7.4.1.2.2 below). She produced fourteen rhotic realisations despite almost mastering non-rhoticity. Eight of these fourteen tokens had (r) as the only vocoid in the syllable rhyme. This counters the prediction

[212]See Chambers 1992, 695 for discussion on Lexical Diffusion and the S-curve

that at any stage in the process of acquiring non-rhoticity there will be significantly more non-rhotic realisations of monophthongal (r) than of centring diphthongs. Instead, EMB's rhotic realisations have a tendency to receive some form of lexical or phrasal stress, as is shown in ten out of fourteen tokens.

One possible explanation for EMB's pattern of non-rhoticity is her age of arrival, which was 18. Except for participant CC, the other participants had an age of arrival ranging from birth to nearly nine years. However, participant CC was also over the 'critical age' upon her first exposure to SBrE: 32 years. The difference between the two participants is that CC only demonstrates three tokens of non-rhoticity, all of which can be considered realisational acquisitions. EMB has actually acquired non-rhoticity, or at least produces non-rhotic realisation in around 80% of all possible utterances of (r).

This thesis does not explore the critical period hypothesis. However, participants EMB and CC were exposed to an SBrE environment well after puberty. There seem to be some age-related effects in their acquisition patterns.

Participant	AA	D1	ID	D2	Percentage change	ID classification
AF	0	67	0	0	0	
NF	1	67	0	1	1.47	
JEC	2.973	0	1	60	100	1 x [ɜːʷ]
JNP	3.058	53	0	10	15.87	
HS	4.493	0	0	60	100	
ROP	4.715	54	0	13	19.4	
MN	5.321	3	0	61	95.31	
JAC	6.014	0	0	67	100	
EB	6.452	66	0	1	1.49	
LP	6.573	1	0	66	98.51	
KN	6.83	67	0	1	1.47	
ES	8.255	67	0	1	1.47	
BB	8.318	67	0	0	0	
EMB	18.21	14	1	55	80	1 x [ɔə]
CC	31.89	67	0	3	4.29	

Table 7.5: Acquisition of non-rhoticity by Americans in England

7.4.1.1 Intrusive-r

It was argued earlier that intrusive-r is not a separate epenthesis rule that is related to non-rhoticity. Rather, intrusive-r and non-rhoticity are all part of the same rule governing SBrE (r) (see rule (42-a) above), where the underlying representation of (r) is the "melodic element" outlined in (43).

Intervocalically, (r) can either be in onset, rhyme or both, depending on syllabification and morpho-phonology. The variable nature of intrusive-r is due in part to stigmatisation that is

reinforced by the lack of word-final or morpheme-final <r> in the orthography. It is proposed that the native GA speakers target one single rule governing SBrE (r) instead of acquiring non-rhoticity and intrusive-r as two separate rules.

The first datum of interest is that six participants uttered an intrusive-r in the phrase *painting and drawing*. For five of these six people, this was the only instance of intrusive-r. All of Chambers's (1988, 659) controls and the only experimental participant to produce intrusive-r did so for this phrase.

Word-internally, there is a high degree of stigma against intrusive-r, particularly after the vowels /ɔː/ and /ɑː/ (Cruttenden 2001, 289; Wells 1982, 225). Phonologically, however, a consonantal [r] is obligatory between /ɔː/ and another vowel. Morpheme boundaries do not inhibit this phonological obligation, despite the social stigma. In the case of *drawing*, phonological habit overcomes social stigma.

One of the participants, LP, has shown 100% usage of non-rhoticity. The use of intrusive-r is unsurprising except, perhaps, that there was only one instance of it. Two other participants, on the other hand, have demonstrated less that 20% of non-rhotic realisations of (r). Yet, they still have produced intrusive-r. Non-rhoticity need not be fully acquired in order for intrusive-r to be present.

This is most obvious with participant AF. It was mentioned earlier that he produced no non-rhotic elements. Yet, he produced three tokens of intrusive-r: one in *painting and drawing* and twice in the phrase *idea of* for both occurrences in the reading passage. These data suggest that non-rhoticity does not need to be established at all for intrusive-r to be present.

One probable explanation is that an [r] has been lexicalised for the words *drawing* and *idea* without having acquired non-rhoticity or intrusive-r[213]. Despite the stigmatisation, the intrusive-r pronunciation of *drawing* has been observed by the author to be prevalent – or at least not uncommon – in SBrE[214]. It is likely that /drɔrɪŋ/ has been acquired as a single unit lexical difference, similar to the different dialectal realisations of *tomato*.It is also probable that, since AF is rhotic, at least in this register, the underlying representation of *idea* has be become /aɪ.dɪə˞/ through the acquisition of a single lexical difference, much like *drawing* and *tomato*.

Another, more probable possibility is that AF has, in fact, acquired non-rhoticity. This was postulated earlier, with the qualification that non-rhoticity is used in a register different than the

[213]The author has met a rhotic Scot and, separately, a rhotic Bostonian who both have /r/ in *idea*, and it is realised as [r] before pauses and consonants.

[214]Observations include polling of native, non-rhotic SBrE speaking students in Linguistics 1 tutorials as well as personal notes made about such occurrences in the broadcast media.

one used with a rhotic North American stranger with a tape recorder. Since intrusive-r is only found in non-rhotic varieties of English, this latter proposition seems likely. Unfortunately, the 'playground' register was not recorded in order to test this possibility.

Another participant, EB, produced only one instance of intrusive-r while also producing only one non-rhotic token. In the phrase *sofa and couch*, EB began with an intrusive-r [soʊfəɹ], but paused and restarted the phrase. The second attempt was made with no intrusive-r but with a brief glottal stop, instead. It is possible that there are two rules governing the target (r). It is more probable that the boundaries separating the commA and lettER set into two distinct categories are weakening. The two sets may be about to start merging while monophthongal (r) in unstressed syllables is beginning to undergo change. The one token of EB's non-rhoticity shows that the merger of commA and lettER is just beginning but also that the variation of (r) in onsets and rhymes is part of the merger.

That being the case, the merger of lettER and commA by acquirers of SBrE is only a surface, realisational merger: [ə] becomes a positional variant of GA (r), bringing (r) in line with the other vocoids; but the syllabification and subsequent realisational processes remain. At this stage, lettER and commA are still distinct. If a native SBrE speaker acquires a tap for both /t/ and /d/, the surface merger does not mean that the underlying representations have also merged.

The merger of lettER and commA (and NURSE) that represent the acquisition of non-rhoticity simultaneously signals the acquisition of intrusive-r. What has to be learned if non-rhoticity is acquired is not a subsequent rule of r-epenthesis. Instead, social stigma demands that a second dialect acquirer must learn to suppress the D1 consonantal realisation of (r) in ambisyllabic position across word boundaries (Giegerich 1992, 282; Wells 1982, 224; Cruttenden 2001, 289).

If intrusive-r were an epenthetic process that can only occur after non-rhoticity has been established in the interdialect phonology (Chambers 1988, 661), then the early occurrences of it such as found in AF and EB are difficult to explain. But, as has been proposed, if the acquisition of non-rhoticity and intrusive-r is the acquisition of concomitant processes, then simultaneous variation in both phenomena can be expected. The transfer of the D1 syllabification of (r) might also explain why EMB has so many instances of intrusive-r: five times out of eight potential realisations. Surprisingly, *drawing* was not uttered with an intrusive-r. She did not produce intrusive-r for the phrase *rotten, raw eggs* either. This suggests that this vowel /ɔː/ is strictly a monophthong with no (underlying) off-gliding element realised as [ɹ] before vowels. Yet, she

did pronounce an intrusive-r in the phrase *cinema instead*, and *cinema* was produced with a full vowel [ɑ:] rather than a reduced vowel.

Determining the acquisition of intrusive-r is not straightforward. For one thing, intrusive-r is variable in SBrE. Gimson outlines a graduation in the likelihood of intrusive-r and linking-r, but indicates that such liaison is variable (Cruttenden 2001, 289). Chambers's controls were erratic in the production of intrusive-r, especially when compared to the categorical results of their performance for the other phonological variables. Additionally, if a dialect learner fails to demonstrate use of intrusive-r, it does not necessarily follow that they have failed to acquire intrusive-r. It is possible that there was 'acquisition' of the social constraints on intervocalic (r). Participant EMB, for example, showed that these constraints were not acquired. Participants LP, JAC, JEC and HS all had 100% SBrE-like non-rhoticity. It is possible that they may have previously produced more utterances of intrusive-r and then, later acquired the social constraints. Alternatively, it is possible that the off-gliding element that yields r-liaison in ambisyllabic position was not incorporated into the underlying representation. This would have yielded no intrusive-r but also, there would have been no linking-r, either.

The elicitation devices were meant to test the presence of intrusive-r. With the data that has been collected, there is no way to test if the social constraints on intervocalic (r) have been acquired or how they could have been acquired. Disregarding the constraints, we can see that intrusive-r is acquired concurrently with non-rhoticity.

Participant	AA	D1	ID	D2	Percentage change	ID/D2 classification
AF	0	5	0	3	37.5	drawing; idea of (x2)
NF	1	8	0	0	0	
JEC	2.973	7	0	1	12.5	drawing
JNP	3.058	7	0	1	12.5	drawing
HS	4.493	8	0	0	0	
ROP	4.715	7	0	1	12.5	drawing
MN	5.321	8	0	0	0	
JAC	6.014	7	0	1	12.5	drawing
EB	6.452	7	1	0	12.5	sofa and couch (false start)
LP	6.573	7	0	1	12.5	drawing
KN	6.83	8	0	0	0	
ES	8.255	8	0	0	0	
BB	8.318	8	0	0	0	
EMB	18.21	3	0	5	62.5	cuba and; lisa and; idea of (x2); cinema instead
CC	31.89	8	0	0	0	

Table 7.6: Acquisition of intrusive-r by Americans in England

The acquisition of non-rhoticity begins with monophthongal (r). It cannot be determined if intrusive-r follows this same path. It is clear that *drawing* is one of the first cases of intrusive-r that is acquired. Since it is probable that an intrusive-r in *drawing* has been lexicalised, it is possible that acquiring this form is the same as acquiring lexical differences such as *tomato* or

the first vowel in *yogurt* rather than attributable to any phonological change. After *drawing* the data do not allow a prediction as to how intrusive-r is acquired.

7.4.1.2 Case studies

7.4.1.2.1 Confound with First Language Acquisition Although this thesis concentrates on second dialect acquisition, the youth of some of the participants makes it possible that there may be some first language/dialect acquisition processes taking place. Participant HS had an age of arrival of five years. This is the age by which conventional linguistic wisdom assumes acquisition of a first language is very nearly complete(Fromkin and Rodman 1998, 318; O'Grady, Dobrovolsky, and Katamba 1996, 462-497; (Akmajian, Demeres, Farmer, and Harnish 1995, 477-478)). HS has completely acquired non-rhoticity in that no rhoticised elements are realised in syllable rhymes. However, in syllable onsets, (r) is sometimes pronounced as [w], e.g. *breathe and breed* [bwiːd əm briːd]. All of the intricacies of rhotic (r) had yet to be acquired when HS was exposed to non-rhoticity. It is possible that HS acquired non-rhoticity through first language acquisition processes. This is possibly in contradiction to participant NF, who showed no non-rhotic utterances, yet was born in London. It is also possible that participant HS has delayed acquisition with regard to (r).

7.4.1.2.2 Pilot Study Drews (forthcoming) examined the acquisition of non-rhoticity by one of the participants of the pilot study of this thesis. There were also several other observations made.

The first was that the participant tended to produce D1 realisations of (r) in the presence of lexical or phrasal stress. There was no claim made about this relationship, but stress very well might play a role in the acquisition of (r). Unstressed syllables have a tendency to reduce to [ə], which is very much the case for participant EMB. Nuclei in stressed syllables tend to be more faithful to a rhotic representation. Although EMB had demonstrated over 80% D2-like tokens for (r), the underlying representation of (r) may still be specified as [+ coronal] which becomes evident as a retroflexed segment in stressed syllables.

The second observation was that for syllable nuclei in which only a mid-central vowel could be realised – i.e., monophthongal (r) – there was a higher proportion of non-rhotic realisations as compared to centring diphthongs and low vowels, regardless of stress. The claim was that the non-rhotic monophthongal (r) needed to be acquired before centring diphthongs since the

former forms part of the latter. This claim has been supported by the data from the primary study.

Another claim that was made was that the difference between the GA and SBrE monophthongal (r) – as well as the differences between the START and NORTH/FORCE vowels – were realisational. On the other hand, the centring diphthongs were considered the have different underlying representations between the dialects. In this thesis, the type of difference between GA and SBrE (r) is classified as underlying, although there clearly are some realisational issues involved.

Also in Drews (forthcoming) , it was claimed that the participant was 'semi-rhotic'. Research done since the pilot study has shown that EMB had 80% D2 realisations of (r). If 'full acquisition' is set at 75%, as it is in this thesis (see section 2.4.2), then this participant is technically non-rhotic. But with 20% D1 utterances, there were enough tokens, combined with the utterances of the other participants, to suggest how SBrE (r) is acquired.

7.4.2 Britons in North America

RP (source)	GA (source)
ɪə	ɪɚ
ʊə	ʊɚ
ɛə or ɛː	ɛɚ
ɔː	ɔɚ, oɚ
ɑː	ɑɚ
ə	ɚ
ɜː	ɝː

Table 7.7: Source and target vowels in acquiring GA rhoticity

The acquisition of rhoticity is the acquisition of a retroflex sonorant realisation of (r) in syllable rhymes. Rhoticity also distinguishes several pairs of lexical sets – and hence certain phones – that have become merged in the evolution of non-rhoticity. If GA syllable-rhyme (r) is not classified as a vocoid, then the acquisition of rhoticity also entails the elimination of, or at least no longer strict adherence to the phonotactic constraint of consonantal [r] only being realised in syllable onsets. There would be some sort of fortition in the syllable rhyme in the acquisition of rhoticity, which is an uncommon event in phonological change.

Despite all of these phonological difficulties, more English participants seem to have acquired rhoticity than Americans have acquired non-rhoticity. There are several possible non-phonological reasons why this may be so. These reasons will be reviewed later in this section.

Of the ten participants used to examine the acquisition of rhoticity, only four have demonstrated less than 90% usage of GA (r). Of these four, one participant, TH, showed no change at all towards rhoticity and a rather high incidence of intrusive-r (see below). This is uninteresting except compared to sibling JH, who completely acquired rhoticity. Possible reasons for this discrepancy will be explored later, since there seems to be no phonological explanation for this.

Another participant, TL, produced only one rhotic token: *corn* from the picture cards. In this instance, (r) is realised as a retroflex off-glide and the second element of a centring diphthong.

Unfortunately, there are not more participants with only a few D2 utterances of (r). So, there is less chance of fully understanding the early stages of the acquisition of rhoticity.

Participant CS produced ten rhotic items. From the word list, *Michael the archangel* was rhotic, as was *car* and *got some popcorn* from the reading passage. In the picture cards, the phrases *cooker*, *push cart* (uttered for *push chair*) and *teddy bear* were produced with a rhotic realisation, as well as the numbers '14', '39', '24' and in the first syllable of '34'. For '24' but not '34', there was a pause between reading the number and naming the item. Out of the ten tokens, five received either lexical stress or some form of (idiosyncratic) sentential focus, such as *push cart* and *teddy bear*[215]. More importantly than stress placement, three of these tokens had (r) as the only element in the nucleus. The remaining tokens, as well as the rhotic response from TL, were all vowel+(r) sequences. It would appear that the acquisition of rhoticity begins with the underlying centring diphthongs[216]. The low vowels followed by (r) are long monophthongs in SBrE. The mid-front vowel /ɛ/ is also subject to monophthongisation when followed by (r). However, the elicitation devices had no prompts for high vowels followed by (r), except for *idea of* in an intrusive-r environment. Because of this lack of specific data, it cannot be determined if the (potential) surface monophthongs in particular attract rhoticity of if the attraction is to all underlying centring diphthongs. Nevertheless, it still remains that underlying centring diphthongs begin to undergo change before monophthongal (r).

This does not necessarily mean that there will always be more rhotic realisations of centring diphthongs than for monophthongal (r). Participant AS produced fourteen rhotic realisations of monophthongal (r) as compared to ten rhotic centring diphthongs. However, to call all of the responses 'rhotic' is a bit misleading.

[215]Participant CS used rising intonation, as if asking a question. In so doing, this participant also moved the phrasal stress to the items with (r).

[216]This assumes that /ɑː/ and /ɔː/ are underlyingly centring diphthongs in SBrE, following Giegerich (1999).

For the phrase *the Earl of Erol* (as.wl), the participant pronounced *earl* as [ɛə̯l]. Syllable rhyme /l/ in GA can cause breaking in the previous vowel. That is, there may be an epenthetic vowel inserted between the nuclear vowel and /l/. However, the /l/ in the phrase *the Earl of Erol* is assigned to the onset of the following syllable, through Onset Maximisation (21)[217]. The /l/ might not be de-linked from the rhyme of the first syllable and so it is still exerting its breaking influence. This very well may be what has happened in this case. The response by AS was classified as intermediate. Of the 56 experimental and control participants, there were no other utterances of *earl* with such a clear diphthongal realisation. The diphthongal quality in the response by AS was accentuated by the onset vowel, traditionally transcribed and described as a central [ɜː], but instead was fronted. The off-glide in *earl* was not a fully rhoticised [ɚ]. In addition to possibly being pre-/l/ breaking, this response could have been an attempt to produce a retroflex sonorant [ɹ̝].

Another main reason that *earl* (as.wl) was classified as an intermediate response was that three other tokens followed similar patterns. There were three instances where a similar kind of diphthong was uttered: *partridge in a pear tree* (as.wl); *corn* (as.pc); and '40' (as.pc). Each of these in SBrE would be pronounced as a monophthong. In GA, they would be pronounced as diphthongs, with the second element of the diphthong being retroflex [ɚ]. Although these three tokens were diphthongal, the second elements were not retroflex. Instead, the second element was schwa.

Giegerich (1999) argues that the low vowels /ɑː/ and /ɔː/ are underlyingly centring diphthongs. This assumption is made based on historical evidence. If the low vowels of START and NORTH/FORCE are underlyingly centring diphthongs, then /ɑː/ and /ɔː/ pattern with the other centring diphthongs. In this way, the low vowels and the centring diphthongs forms a secondary system of underlying representations that compensates the loss of rhoticity. However, /ɑː/ and /ɔː/ seldom surface as diphthongs in present-day SBrE[218], and this is an argument against them being underlying centring diphthongs[219]. There is a change in progress in SBrE concerning the smoothing of centring diphthongs (Giegerich 1997; 1999) and determining the exact underlying forms while this change is taking place may prove to be counterproductive[220]. However, the manifestation of low centring diphthongs by AS suggests that (r) can be realised as [ə] in all syllable rhymes, just as it is for the non-low vowels. In other

[217]The breaking before /l/ in *earl* describes the author's idiolect, in which *earl* is pronounced [ɝːl]. Additionally, in the phrase *earl of*, the /l/ is ambisyllabic, still causing an epenthetic vowel but also in onset position of *of*.

[218]The /ɔː/ vowel surfaces as a diphthong morpheme-finally in some London speech (Wells 1982, 310ff.).

[219]Depending on what is considered acceptable abstractness regarding underlying representations.

[220]This was discussed briefly in 7.2.3.

words, the historic process of smoothing from /ɒə/ to /ɑː/ and from /ɔə/ to /ɔː/ is being reversed. A similar process might also account for the diphthongal realisation of *earl*, even though it is assumed that the NURSE set did not undergo smoothing.

The stressed vowels in *earl*, *partridge*, *corn* and '40' are all realised as monophthongs in present-day SBrE. All other realisations of SBrE syllable-rhyme (r) are manifest as centring diphthongs, with the second element invariably being a schwa-like segment. In the acquisition of GA rhoticity by AS, the [ə] off-glide of SBrE syllable-rhyme (r) is extended to all allophones related to syllable-rhyme (r) – that is, ɜː → ɜə, ɔː → ɔə ɑː → ɑə. This seems to include /ɜː/ even though the segment is considered to be the reflex of (r) itself in monodialectal SBrE. The change in quality of /ɜː/ in *earl* might be due to a dissimilation process in the interdialect since [ɜː] and [ə] are acoustically and articulatorily similar. The motivation for the dissimilation is to implement a distinct, two-segment V+(r) sequence, even though neither the target nor the source have a two-segment sequence for this vowel. It is an attempt to realise a consonantal (r) while maintaining a vowel. In the responses by AS, the onsets of the vowels in *partridge*, *corn* and '40' also deviate in quality from normal SBrE. The /ɑː/ of *partridge* is more front, approaching a central [a]. AS utters the /ɔː/ of *corn* and '40' lower than normal SBrE, approaching [ɑː]. This suggests some sort of chain shift in this idiolect. One reason that has been suggested as to why the low vowels /ɔː/ and /ɑː/ are not realised as centring diphthongs is because they are 'close enough' to [ə] that the schwa-stage did not need to be traversed between the low vowels and (r) (Wells 1982; McMahon 1996)[221]. If /ɔː/ and /ɑː/ are 'close enough' to [ə], then the change of their quality in the onsets of *partridge*, *corn* and '40' could be another dissimilation process. Again, the dissimilation serves to distance the vowel and the second segment, an implementation of (r), so that (r) is 'far enough' and the central, schwa region must be traversed in order to realise both underlying segments. It is also possible that these vowels are being affected by the merger of the *cot* ~ *caught* vowels (see the previous chapter). Nevertheless, the diphthongal realisations of /ɜː/, /ɔː/ and /ɑː/ have a different value in the idiolect of AS than in most speakers of SBrE.

Since the acquisition of rhoticity seems to start with the SQUARE, NORTH/FORCE and START lexical sets, it is plausible that the latter sets undergo diphthongisation before any retroflexion of [ə]. The 'insertion' of the [ə] realisation of (r) in *earl*, as opposed to breaking caused by /l/ is speculation. All other realisations of members of the NURSE set are realised as monophthongs, either [ɜː] or [ɜ˞ː]. This includes the phrase the *prettiest girl in the class*,

[221] Words such as *cinema*, whose final vowel can be either [ɑː] or [ə (EPD, 91)], support this notion.

realised with a rhotic [ɝː]. The /l/ in this phrase is in a similar environment to *the Earl of Erol* but does not cause such noticeable diphthongisation.

In addition to the three non-rhotic participants and the 'semi-rhotic' AS, there were six others who acquired rhoticity. Participants JH and CM both produced 100% GA-like rhotic responses. The remaining four rhotic speakers still managed to utter the occasional non-rhotic realisation.

Participant NM produced a non-rhotic realisation in the phrase *birthday greetings* (nm.wl) as well as in the word *bird* within the phrase *the bird sat on the kerb with fur* (nm.wl). His sister uttered a non-rhotic vowel in the unstressed syllable of *trousers* (aam.pc). In another family, participant DP pronounced *urban* from the phrase *urban and rural* (dp.wl) with a non-rhotic vowel. His brother, JAP, produced two non-rhotic vowels in unstressed syllables, both from the reading passage: *the...monster burned* (jap.rp) and *pool of water* (jap.rp). For each of these non-rhotic tokens, (r) is the only vocoid in the syllable rhyme.

To briefly recount the history of non-rhoticity as subscribed to in this thesis, first there was a change in syllable-rhyme (r). Syllable-rhyme (r) became a vowel itself, [ə], directly. Centring diphthongs were the result. The low centring diphthongs /ɔə/and /ɒə/, as well as /ɛə/ today, smoothed and became the monophthongs /ɔː/ and /ɑː/ (and /ɛː/). The data collected suggest that the acquisition of rhoticity follows the reverse order in which the historic changes that took place in SBrE (r).

The intermediate responses from AS suggest that the low monophthongs become diphthongs, possibly in the earliest stages in the acquisition of rhoticity. The next changes we see towards rhoticity are in the low vowels: *corn* (tl.pc); *archangel* (cs.wl); '14', '24' (cs.pc); *push cart* (cs.pc); *car* (cs.rp); *popcorn* (cs.rp). Finally, we see monophthongal (r) still produced with a non-rhotic realisation as a final vestige of SBrE: *trousers* (aam.pc); *bird* (nm.wl); *urban* (dp.wl); *monster* (jap.rp); and *water* (jap.rp).

As a realisational difference, it is expected that the acquisition of rhoticity would begin with monophthongal (r) and work its way through the remainder of the (r) system, as it does in the acquisition of non-rhoticity. The acquisition of the realisational difference of consonantal (r) could then more easily be applied to the centring diphthongs and the low vowels. However, the evidence suggests otherwise. Since acquiring rhoticity from a native-non-rhotic dialect is the opposite of what happened historically, the acquisition process itself ultimately amounts

to the reverse of the historical processes, too[222]. Additionally, the acquisition of rhoticity is a mirror image of the acquisition of non-rhoticity by native GA speakers.

Participant	AA	D1	ID	D2	Percentage change	ID classification
AL	3.77	29	0	16	35.56	
DP	4.44	1	0	65	98.49	
CM	5.04	0	1	63	100	1 x [ɔɹ]
JMP	6.65	4	0	62	93.94	
TL	6.67	66	1	2	4.35	1 x [ɔːɚ]
AAM	7.15	3	0	66	95.65	
JH	7.33	0	0	64	100	
NM	8.35	4	0	63	94.03	
TH	10.93	67	0	0	0	
AS	14.27	40	4	25	42.03	1 x [ɜːɚ], 2 x [ɔːɚ], 1 x [ɔə]
CS	17.52	57	0	10	14.93	
AWM	36.54	0	0	0	N/A	

Table 7.8: Acquisition of Rhoticity by Britons in North America

7.4.2.1 Intrusive-r

It is hypothesised in section 7.2.4 that a series of mergers that resulted from the historic loss of (r) introduced intrusive-r into modern SBrE[223]. If this hypothesis is correct and if these mergers are reversed, which would be the case in the acquisition of rhoticity, then intrusive-r should eventually be eliminated from the phonology. The liaison phenomenon that is manifest in intrusive-r and linking-r would still exist, but it would apply to only one member of a pair of formerly merged sets. The historic (r) lexical sets (NORTH/FORCE, START, NEAR, SQUARE, CURE, NURSE, letter) should be the sets that maintain r-liaison. The result would be linking-r as the only manifestation of r-liaison, from the perspective of monodialectal SBrE. By being assigned to only one lexical set in the acquisition of a distinction, intrusive-r would be eliminated.

In the process of acquiring rhoticity, the distinction between each pair of SBrE-merged lexical sets is naturally variable, e.g. between NORTH/FORCE and THOUGHT. The consonantal realisation of intervocalic [r] is phonologically obligatory but the application of that obligation varies, in part because of social stigma from SBrE, but also because the boundaries between the separate pairs of lexical sets are not yet established. It is difficult with interdialectal data, however, to determine if the variability of intrusive-r is due to the variability in the acquisition of (r) or if it is the variation caused by social stigma inherited from the native SBrE background.

[222] Admittedly, acquiring ahistorical phenomena might not follow the reverse of historical processes.

[223] Although other phonological phenomena may have motivated further development of intrusive-r such as avoidance of adjacent vowels (Shockey, p.c.).

The data, in general, show less usage of intrusive-r the more rhotic a participant is. At the one extreme, Participant TH did not produce any rhotic tokens at all and uttered intrusive-r five times. Other native, fully non-rhotic speakers varied between 0 and 3 uses of intrusive-r. Participant TL uttered one rhotic realisation and one token of intrusive-r. Participant AS, who has not fully acquired rhoticity but also is not fully non-rhotic, uttered intrusive-r three times. At the other extreme, those who have acquired rhoticity did not produce any instances of intrusive-r. Because of the variable nature of intrusive-r in SBrE, there is no way to know how often these participants produced intrusive-r before being exposed to naturalistic GA. Hence there is no way to actually map any decline in usage as rhoticity is acquired. However, because those that remain non-rhotic use intrusive-r and intrusive-r is seldom, if ever, used by those that have acquired rhoticity, there seems to be a general pattern showing that these two variables are acquired concurrently. This supports the proposition made in this thesis that r-liaison (intrusive-r) is a general part of non-rhoticity rather than a separate but concomitant insertion rule.

Chambers (1988) suggests that there might have been an ordering effect in the phrase list[224]. The first two potential realisations of intrusive-r found in the word list are *sofa and couch* and *painting and drawing*. Chambers postulates that these two phrases are the most likely to be realised with intrusive-r, particularly by the control participants. Later potential realisations were not uttered with intrusive-r. The participants are unaware of the phonological variables being examined as they perform the exercises. When they come across the phrases *sofa and couch* and *painting and drawing* early in the word list, it is assumed that phonological habit will yield intrusive-r naturally. Once they have come across these phrases, the social stigma against intrusive-r is primed and will counteract any intrusion in this environment[225].

In this study, like Chambers's study, it was only the first few potential realisations of intrusive-r that were pronounced as such in both the word list and the reading passage. For example, CS pronounced intrusive-r five times with only the first few potential cases from each test being triggered. AS had many more realisations of GA (r) than CS, but fewer cases of intrusive-r: only three.

Of the six participants who demonstrated over 90% acquisition of rhoticity, there was only one token of intrusive-r. Participant JH uttered intrusive-r in the first instance of *idea of* in the reading passage. This shows that it is possible that acquisition may never be 'complete'. It also

[224]Not to be confused with an ordering effect caused by certain application of phonological rules.

[225]This is also a plausible explanation for the occurrence of intrusive-r in certain phrases in native GA-speaking participants acquiring SBrE.

shows that in the acquisition of (r), the variation of intrusive-r might differ from the variation of (r) itself, but never too much so.

The other participants who produced intrusive-r all did so in the phrase *painting and drawing*. This supports the notion that /r/ has been lexicalised into this word.

The 'loss' of intrusive-r closely mirrors with the acquisition of rhoticity. The realisation of a consonantal, intervocalic [r] is still phonologically obligatory, but only for the lexical sets in which (r) existed historically. Any variability is due to a combination of the inherent variability of the phenomenon in the native SBrE and the variability in acquiring the distinction between the historic (r) lexical sets[226] and the a-historic (r) lexical sets[227].

Participant	AA	D1	ID	D2	Percentage change	D1/ID classification
AL	3.77	0	0	6	100	
DP	4.44	0	0	8	100	
CM	5.04	0	0	8	100	
JMP	6.65	0	0	8	100	
TL	6.67	1	0	7	87.5	drawing
AAM	7.15	0	0	8	100	
JH	7.33	1	0	7	87.5	idea of (x1)
NM	8.35	0	0	8	100	
TH	10.93	5	0	3	37.5	sofa and; drawing; cuba and; idea of (x2)
AS	14.27	3	0	5	63.5	drawing; idea of (x2)
CS	17.52	5	0	3	37.5	sofa and; drawing; idea of (x2); cinema instead
AWM	36.54	N/A	N/A	N/A	N/A	

Table 7.9: Use of intrusive-r by Britons in North America

7.4.2.2 Individual cases

The most interesting individual case has already been discussed. Participant AS is the only 'semi-rhotic' speaker in this study. Her interdialectal utterances have helped suggest the very beginning stages in the acquisition of rhoticity. However, her responses do not follow the general pattern predicted by the performance of the other native SBrE speakers acquiring GA.

Most of AS's rhotic responses were in producing monophthongal (r). This would suggest that any change in (r) must begin with (r) itself and as the only vocalic element in a rhyme. The underlying category of (r) represented as a monophthong in a nuclear environment is fundamental to the acquisition of either a rhotic system or a non-rhotic system. It is plausible to posit that, before any lasting effects can be made to the rhoticity system, the underlying category of (r) itself must undergo severe change.

[226] NORTH/FORCE, START, NEAR, SQUARE, CURE, NURSE, letter

[227] THOUGHT, PALM, comma

Apart from AS, the bulk of the data suggest that monophthongal (r) is not the first element to change in acquiring rhoticity. It is possible that monophthongal (r) has a faster rate of acquisition than the centring diphthongs. The initial-state and 'final'-state data available show that changes in monophthongal (r) start and finish later than any changes to the centring diphthongs. But the endpoints do not show how fast the change of monophthongal (r) is in between the endpoints. The change in monophthongal (r) could possibly occur very rapidly, but not fast enough to reach a fully D2-acquired state before the centring diphthongs. The data available, however, deny this claim.

Another interesting point about the semi-rhoticity of AS is the value of stress. Of the twenty-eight rhotic or intermediate responses, nineteen received primary or secondary lexical stress. Of the remaining eleven, six were from reading numbers. It is interesting to note a similar pattern for the acquisition of (r) by participant EMB, even though non-rhoticity SBrE was EMB's target. For EMB, ten out of fourteen rhotic responses received stress.

The relationship between stress and rhoticity was initially proposed because of the data from EMB. This was further supported by AS. The older age of arrival for the two of them was a possible reason for this relationship. Both AS and EMB were past the critical age upon their arrival in their new homes. AS was fourteen years old and EMB was eighteen. However, CS has an age of arrival in North America of seventeen. Only five out of nine of CS's rhotic responses received any sort of stress. This is not enough of a majority to make an impression. Instead, the relationship between stress and rhoticity as demonstrated by AS and EMB might be idiosyncratic.

Perhaps for some people, the emphasis of stress attracts change, or encourages conservatism of a specific form. The attractive powers of stress have been mentioned earlier and in Drews (forthcoming) as a possible tool in the acquisition of (r). Perhaps the link between stress and rhoticity is specious. Only more data would answer that.

7.4.2.3 Non-phonological reasons for success in acquiring rhoticity

There are numerous phonological reasons why rhoticity should be difficult to acquire. In spite of these, six out of ten participants acquired rhoticity, each participant producing a D2-like response at least 92% of the time. More English participants seem to have acquired rhoticity than American participants have acquired non-rhoticity. There are several possible non-phonological reasons why this may be the case.

The first possible reason is the influence of American media. For the most part, this explanation is dismissed. Speakers of many languages since time immemorial have complained about the 'corruption' of language used by younger generations. Today, media such as television and films are the recipients of such complaints. The case of Genie (Curtiss 1977) has shown that communicative interaction – as opposed to just reception – is vital for language acquisition. However, there might be some role that the media play in second dialect acquisition. The media might prime dialect learners, giving them perceptual exposure and possibly a passive awareness of another dialect without the interaction required for acquisition. The exact nature of the role of television and films and the nature of passive awareness are not known, despite many non-linguists' claims.

There is another more feasible explanation as to why rhoticity was a more successfully acquired than non-rhoticity. In two different families that moved from England to North America, the fathers are natively rhotic. The two families had lived between the Winchester and Bristol areas in the rhotic southwest of England (Trudgill 1990, 51-56; Wells 1982, 341-342). This certainly would have provided an opportunity to interact with rhotic speakers and, potentially, to acquire rhoticity natively. The fathers have been excluded in the data analysis of rhoticity. However, the members of their families were classified as having a non-rhotic D1. The mothers of both families are non-rhotic. Also, it has been shown that there were some non-rhotic tokens for the children of these families. Even TH, who is completely rhotic, produced intrusive-r once. Given the relationship between intrusive-r and non-rhoticity, this suggests that non-rhoticity was part of his idiolect at one time. These participants may not have had acquired productive rhoticity natively, but they may have had a passive awareness or even some competence of rhoticity before being exposed to the rhoticity of North America[228].

Following the arguments of interaction, the discrepancy between brothers TH and JH have yet to be explained. At the time of the recording, their family had lived in California for just over three years. JH was enrolled at the local state school. Amongst other things, school is the social network for children, and communicative interaction is necessary. JH was enrolled at school at the age of five, which is when schooling begins in California. TH is three years older than his brother. Instead of enrolling him at the local school, his parents decided to try home-schooling. After two years, they decided to home-school both of the boys. It is safe to assume that JH, for the two years he was at school, he had to interact with speakers of the local dialect. Such interaction was probably not nearly as abundant for TH. JH had acquired all of

[228] If it is possible that one can have a passive competence with no performance, that is.

the GA phonological phenomena being examined whereas TH showed little or no change for any of the phenomena. Clearly, interaction must have played a role, which was most clearly seen in the boys' use of (r).

A third reason why rhoticity was so readily acquired is because of orthography. Rhoticity is transparent in English orthography. One of the primary requirements of the participants of this study is that they be literate. It is believed that there is a link between literacy, orthography and phonology. Intrusive-r receives its stigma from knowledge of English orthography. However, orthography did not seem to make any difference in the acquisition of (t)[229], even though a voiceless /t/ is transparent in the orthography. Unfortunately, the link between literacy, orthography and phonology merits a thesis of its own, and thus is not explored here (see, for example, Montgomery (2001)).

7.5 Comparison, Discussion and Conclusions

7.5.1 Statistical Comparison

7.5.1.1 Comparison Between Groups

Participant	Percentage change
AF	0
NF	1.47
JEC	100
JNP	15.87
HS	100
ROP	19.4
MN	95.31
JAC	100
EB	1.49
LP	98.51
KN	1.47
ES	1.47
BB	0
EMB	80
CC	4.29
Average	41.29

Table 7.10: Average change towards non-rhoticity for Americans in Britain

Comparing each group acquiring the D2 target (r) statistically, there appears to be no significant difference between the two groups. It was explained in section 3.3.4 that each phonological variable examined in this thesis is treated as a single sociolinguistic variable.

[229] Either native GA speakers losing tapping or native SBrE speakers acquiring tapping.

So, the acquisition of rhoticity is not statistically compared to the acquisition of non-rhoticity: rather, native GA speakers targeting one D2 value of (r) are compared to native SBrE speakers acquiring a different D2 value of the same sociolinguistic variable (r).

Comparing the two groups using a Mann-Whitney test for comparing non-parametric means and excluding the families who come from the rhotic region of England, $z = -0.569$, insignificant with $p = 0.306$. Including the families from the rhotic southwest of England, $z = -1.003$ and $p = 0.129$. Although acquisition of non-rhoticity may be natural – it is clearly a historical progression – complete acquisition is not achieved by either group.

Participant	Percentage change
AL	35.56
DP	98.49
CM	100
JMP	93.94
TL	4.35
AAM	95.65
JH	100
NM	94.03
TH	0
AS	42.03
CS	14.93
AWM	N/A
Average	61.73

Table 7.11: Average change towards rhoticity for Britons in North America

7.5.1.2 Comparison to Other Phonological Variables

For the native GA speakers, non-rhoticity is the least successfully acquired. Using a Wilcoxan test for comparing non-parametric means, tapping had a significantly higher success rate than non-rhoticity with $z = -2.103$ and $p = 0.0175$. The acquisition of the BATH vowel was not significantly acquired more successfully than non-rhoticity. This is somewhat of a surprise. The acquisition of non-rhoticity entails the acquisition of a new output realisation for a phone, phonetic changes to centring diphthongs and the merger of several vowels. The acquisition of the BATH vowel is the acquisition of a new output for an existing underlying representation and the rule governing that new output. The several exceptions and the unrelated contexts of the conditioning environment may have contributed to the statistically insignificant success rate of the acquisition of the BATH vowel compared to the acquisition of non-rhoticity.

For the native SBrE speakers, the acquisition of rhoticity is not significantly any more successful in statistical terms than the acquisition of any of the other phonological variables.

Comparing tapping to rhoticity using a Wilcoxan test, z = –0.415, p = 0.339. Comparing the acquisition of the THOUGHT ~ LOT merger to the acquisition of rhoticity, z = –1.4, p = 0.0805. This is surprising, considering The claim that mergers, in general, expand and the expense of distinctions (Labov 1994, 313f.) and the acquisition of rhoticity entails at least three distinctions in underlying categories. One possible influence in this insignificance is that the THOUGHT vowel, /ɔː/ is part of the THOUGHT ~ LOT merger in acquiring GA and is also the same underlying vowel as the NORTH/FORCE vowel in non-rhotic SBrE. A merger and a distinction are both affecting the one vowel, /ɔː/. Akin to this relationship, the LOT vowel is merged with the PALM vowel in GA[230]. At the same time, the PALM vowel /ɑː/ is the same vowel as the START vowel in SBrE. Again, one vowel, /ɑː/ is simultaneously part of a merger and a distinction both in progress. The BATH vowel – the same /ɑː/ vowel as the PALM and START sets – is statistically acquired as successfully as rhoticity, with z = 0 and p = 1. Because there is so much activity in the low, back region of the vowel trapezium, the lack of statistical significance is unsurprising.

Because of the inherent variability of intrusive-r in SBrE, this variable was not included in statistical analyses – either compared to the acquisition of other phonological variables or in comparing native SBrE speakers to native GA speakers each acquiring a second dialect.

7.5.2 Age

Because the difference between GA and SBrE (r) affects underlying structure, the dialectal difference in (r) is classified as an underlying difference. However, unlike the 'pure' underlying difference of the *caught ~ cot* vowel(s), the difference in (r) has a realisational element: either r → ∅ or [ə]; or ∅ → [r]. Dialect learners can implement these realisational elements as part of their interdialect phonologies. It was shown in sections 4.5.2 and 5.5.2 that age is not an inhibiting factor in the interdialectal development of such realisational or rule-governed differences.

With the exception of participant EMB (see section 7.4.1.2.2), it is likely that the older participants can acquire the realisational aspect of (r), or rather, incorporate a realisational aspect into their interdialectal phonologies. As was shown in section 6.5.2, interdialectal development of underlying differences is inhibited by age. However, there remains the underlying aspect of (r) – either the centring diphthongs and the merger of /ɑɚ/ ~ /ɑː/ and /ɔɚ/ ~ /ɔː/ in the acquisition of non-rhoticity or the categorical split of /ɑɚ/ ~ /ɑː/, /ɔɚ/ ~ /ɔː/,

[230]The acquisition of this merger is not discussed in this thesis.

and /ɚ/ ~ /ə/[231] in the acquisition of rhoticity. Although interdialectal development of the realisational or rule-based aspects of (r) is possible by older speakers, the data indicate that interdialectal development of the underlying aspect is unlikely.

The underlying aspect of (r) as well as the other complication inherent in (r) may be the reason why there are some younger participants that have not (yet?) acquired the D2-like performance of (r). Comparing older speakers to younger speakers, both are capable of acquiring the realisational and rule-based aspects of (r). However, only younger speakers are likely to acquired every aspect of (r) while adults will only acquire some portion of the realisational aspect.

7.5.3 Conclusions

The most noticeable result when comparing native GA speakers acquiring non-rhoticity and native SBrE speakers acquiring rhoticity is the mirror image.

The evidence presented throughout section 7.4.1 suggests that native GA speakers first acquire the non-rhotic realisation of monophthongal (r). After a critical mass of monophthongal (r) has changed, the non-rhotic realisations of centring diphthongs begin to change. The last feature of non-rhoticity to be acquired is the Ø representation of (r) following the low vowels /ɔː/ and /ɑː/.

ɝː → ɜː	ɪɚ → ɪə	ɑɚ → ɑː
ɚ → ə	ʊɚ → ʊə	ɔɚ → ɔː
	ɛɚ → ɛə	

Table 7.12: Progression in the acquisition of non-rhoticity

The evidence presented in section 7.4.2 suggests that native SBrE speakers, on the other hand, first acquire diphthongal realisations for the START and NORTH/FORCE vowels. Then rhotic realisations for the centring diphthongs are acquired. Lastly, monophthongal (r) changes.

ɑː → ɑː, ɑɚ	ɪə → ɪɚ	ɜː → ɜː, ɝː
ɔː → ɔː, ɔɚ	ʊə → ʊɚ	ə → ə, ɚ
	ɛə → ɛɚ	

Table 7.13: Progression in the acquisition of rhoticity

The loss of rhoticity by native GA speakers appears to follow historical patterns. In the shared history of SBrE and GA, the first change was in the consonantal nature of (r). At this point, the two varieties split and (r) further changes to the neutral vowel [ə] in SBrE syllable

[231] Bearing in mind the questionable underlying status of /ə/.

rhymes. This is the first change made by native GA speakers acquiring SBrE. Following this change in (r) itself was a change in vowel+(r) sequences, both historically and with the Americans living in England. The last change historically was the smoothing of the low diphthongs to long monophthongs, a phenomenon witnessed in the twentieth century (Giegerich 1997). This is also the last feature of non-rhoticity acquired by native rhotic speakers.

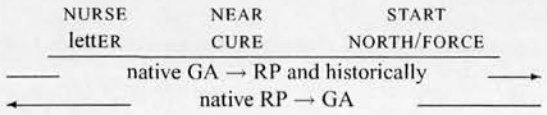

Figure 7.4: Progression in the change of (r)

Native SBrE speakers acquiring rhoticity reach each of these points in exactly the reverse order in which rhoticity was historically lost, as is seen in figures 7.12 and 7.13. The early stages in the acquisition of rhoticity is the reversal of the mergers of the PALM ~ START and THOUGHT ~ NORTH/FORCE lexical sets. One of the general hypotheses of this thesis is that realisational and rule-based differences are liable to change before underlying differences, as is seen in the acquisition of non-rhoticity. However, in the acquisition of rhoticity, this is not the case. It is probable that, instead of distinguishing the PALM ~ START and THOUGHT ~ NORTH/FORCE sets in the early stages, these merged sets are simply pronounced with diphthongal realisations. Sweet (1908) reported diphthongal realisations for both THOUGHT and NORTH/FORCE, indicating that the sets were probably already merged (as cited in Giegerich 1997).

Throughout this thesis, there has been an implicit but superficial relationship between dialect acquisition and historical change. Clearly for some phonological variables, the relationship is more than superficial. Historical analyses can be one tool in the prediction of how an interdialect will develop.

Another tool that can help predict interdialectal development is the accurate representation of a phonological variable in both the native and target dialects. It was argued earlier in this chapter that SBrE and GA share the same general rule governing (r). This rule makes (r) [+ consonantal] in syllable onsets and [– consonantal] in syllable rhymes. The differences between the dialects is that the rhyme variant is retroflex in GA but not in SBrE and that (r) is specified as [+ coronal] underlying in GA but in SBrE, [coronal] is only specified in syllable onsets. The present-day description certainly helped explain how monophthongal (r) was the first feature to undergo change in the acquisition of non-rhoticity. The change was simply the

change of one output of an existing phonological rule to another output, one which happened to be part of the native phonic inventory. These results could have been explained by a rule of r-deletion. Such a rule could not readily account for the acquisition of non-rhotic centring diphthongs. The r-deletion rule would have yielded lax, possibly long, monophthongs, which are not found at all in the data. The r-deletion rule is actually slow to be incorporated into the interdialect, as evidenced by the resistance of the START and NORTH/FORCE vowels becoming non-rhotic by native GA speakers.

Because the underlying category and the governing environment of (r) are essentially the same in SBrE and GA, it was expected that native SBrE speakers acquiring rhoticity would follow a similar pattern as their native GA counterparts. That is, the realisational difference of monophthongal (r) would have been acquired with subsequent changes to the centring diphthongs and finally an epenthesis of (r) after the low vowels. Rather than the expected initial phonetic acquisition leading to underlying change, the acquisition of rhoticity instead follows the reverse of the historical process[232]. In this instance, a detailed description of the synchronic treatment of (r) in both varieties was insufficient in independently predicting the acquisition of a second dialect phonological variable.

The synchronic analysis presented earlier classified intrusive-r and non-rhoticity as the same phenomenon instead of two separate rules. Such a description implies that the acquisition success of both intrusive-r and (r) would more or less be the same at any given stage. If there was no acquisition of D2 (r), then there would be no D2 usage of intrusive-r; i.e. no usage of intrusive-r by native GA speakers and variable usage by native SBrE speakers. Similarly, if there were nearly complete acquisition of D2 (r), then there would also be D2 usage of usage of intrusive-r; i.e. no tokens of intrusive-r for native SBrE speakers and inconsistent usage by native GA speakers. The problem with this prediction is the variability of intrusive-r in SBrE: it is difficult to define what constitutes regular usage of intrusive-r in SBrE. Despite this problem, the prediction that D2 (r) and D2 intrusive-r will always be at a similar stage in acquisition success is more or less accurate. There was the case of AF, who produced tokens of intrusive-r but no tokens of non-rhoticity. This does not indicate that intrusive-r is a separate process. Rather, AF's case shows that the rule governing syllable-rhyme (r) is currently undergoing some change, assuming it has not already done so in a more casual register. It is also possible that he only has the post-lexical version of the rule. Alternatively, it is probable that a new lexical representation for *idea* /aɪ.dɪə/ has been acquired by AF. Except for this case, it still

[232]The acquisition along ahistorical lines happens to follow an expected pattern, too, but not a phonologically expected pattern.

seems that intrusive-r and non-rhoticity are part of the same phonological process and are acquired or 'lost' as such.

It was originally predicted that the acquisition of (r) would be the least successfully acquired phonological variable studied in this thesis. For native GA speakers, this appears to be the case both impressionistically and statistically. For native SBrE speakers, however, this status of (r) in the first dialect is unknown for about half of the native SBrE speaking participants. This poses the same kind of statistical problems as the uncertainty of the D1 status of the THOUGHT and LOT vowels in GA. From a phonological and sociolinguistic standpoint, this is uninteresting: the language of the home (partially) matches the language of the playground in this one aspect, so there is nothing new to acquire. This is comparable, say, to examining the acquisition of the different Voice Onset Times of voiceless stops in SBrE and GA. The speakers who were quite obviously non-rhotic natively had a more difficult time acquiring rhoticity. Likewise, native rhotic GA speakers demonstrated rich interdialects in the acquisition of non-rhoticity: another way of saying they, too, did not acquire non-rhoticity with ease. It still stands to reason that the acquisition of (r) in a second dialect will, therefore, not be as successful as the acquisition of other, less complicated and less abstract variables. Also, it is clear that first dialect structures are being manipulated rather than new rules being innovated. The complexity inhibits many participants from changing their interdialects at all with respect to (r), but for others, the complexity creates interdialects that, with the examination presented in this chapter, can show how (r) is acquired in a second dialect.

Chapter 8

Statistical Analysis

At the end of each of the previous four chapters, there were small statistical analyses. Those statistics made two basic comparisons. The first compared the Americans living in the London area with the English participants living in North America with regard to the phonological variable being examined[233]. The second compared how each group's performance for the phonological variable being examined to the previous phonological variables[234]. This chapter is to provide an overall statistical comparison across all of the phonological variables. However, unlike the previous chapters, this chapter will not compare the native GA speakers to the native SBrE speakers. Instead, this chapter will statistically compare how each group performed across all of the phonological variables. One of the stated hypotheses of this thesis is that some phonological variables are more likely to undergo more interdialectal development – i.e. the D2 targets are likely to be acquired – while other variables are more likely to maintain native-like manifestations. More specifically, realisational differences are more liable to change than differences in underlying representations.

The previous chapters tested this hypothesis in a qualitative, almost subjective fashion. The analyses were subjective in that statistical 'noise' such as false starts, self-corrections and misreadings could be used to examine the interdialect phonology. This brief chapter, however, takes a more more quantitative approach to the hypothesis.

There are three phonological categories examined in this thesis. There are output realisational differences; rule-based or contextual differences; and differences in underlying representations and underlying categories[235]. It was originally predicted that rule-based or

[233] With the exception of the *cot* ~ *caught vowel(s)*.

[234] Again, with the exception of the *cot* ~ *caught vowel(s)*.

[235] The definitions for these differences can be found in section 2.6.

contextual differences would have undergone less interdialectal development than strictly output realisational differences, yet rule-based differences would have had more change in the interdialect than underlying differences.

To briefly summarise, the four phonological variables and the sections in which the statistics of these variables are discussed are: medial /t/ (4.5.1); the realisation of the vowel of the BATH lexical set (5.5.1.1); the merger or distinction of the vowels of the THOUGHT and LOT lexical sets (i.e. *caught~cot*) (6.5.1.1); and rhoticity 7.5.1[236]. Intrusive-r was included as a subsection of the analysis of syllable-rhyme (r). In this chapter, intrusive-r is statistically treated as an additional phonological variable.

There are two differences in underlying categories: *caught* ~ *cot* and rhoticity. This leaves one variable for an output realisational difference (medial /t/) and one variable for a rule-based difference (BATH).

Three additional phonological variables will also be included in some of the following statistical analyses: medial /nt/, described in 4.2.1.4; the realisation of the GOAT vowel (for Americans in London)[237]; Canadian Raising (for Britons in North America)[238]. The phonetic and phonological analyses of these three variables was entirely impressionistic. For that reason, their inclusion in this chapter is only supplementary. Their inclusion adds more members to the output category and the rule-based category. The secondary variables are used to test the generalisability of the hypothesis of realisational differences and contextual differences having more interdialectal development than underlying differences. The GOAT vowel and the tapping of medial /nt/ join the tapping of /t/ as output realisational differences. Canadian Raising joins the BATH vowel as a rule-based difference. The categorisation of underlying differences remains unaffected by the inclusion of these three additional phonological variables.

The *caught* ~ *cot* variable is not included in the statistical analysis of Americans living in London. It was stated in section 6.4.1 that the D1 status of the vowel(s) is unknown, so there is no way to analyse interdialectal change. Such lack of analysis precludes any statistical analysis. For English families living in North America, this is not a problem: native speakers from the

[236]The rest of the chapter will make use of the Labovian convention of rounded brackets, referring to rhoticity and non-rhoticity simply as (r)

[237]In both SBrE and GA, the GOAT vowel is realised as a diphthong. In SBrE, the diphthong has a fronter onset than in GA. See (EPD, pg. v).

[238]The diphthongs /aɪ/ and /aʊ/ have raised onsets before voiceless obstruents are are realised as [ʌɪ] and [ʌʊ], respectively.

three regions in which recordings were made – Ottawa, Phoenix and the San Francisco Bay area – all have the two word classes merged into a single vowel (Labov 1996)[239].

For each phonological variable, there is a set number of potential realisations dictated by the word list, picture cards and reading passage. Occasionally, there were fewer opportunities taken than was afforded by the elicitation devices. This was due to several factors: misreading a word (*plastic* for *plaster*); not reading a word at all (*parochial*); pausing while reading (*thought || occurred*).

The number of D2 and interdialectal responses was then compared to the total number of opportunities taken for each feature and a simple percentage was made. These percentages are what are reported throughout the statistical analyses of the previous chapters and are the numbers used in this chapter, too. Since there was between 8 and 67 potential realisations, depending on the given feature, converting the numbers to percentages has the potential to magnify small differences.

Nevertheless, there are several reasons for using percentages. Firstly, Chambers – upon whose study this thesis was originally based – set a precedent by using percentages in his analysis of second dialect acquisition. Percentages are tangibly understandable for non-statisticians: it is fairly easy to figure out that 20% change equates to little interdialectal development while 80% change indicates considerable interdialectal development. Additionally, converting to percentages allows for easier comparison of scores: a score of 12 D2/ID utterances is equal to 100% change for medial /nt/, but less than 20% change towards non-rhoticity in SBrE. Many statistical tests can compensate for such a difference, but one of the requirements for running these kinds of tests is that there is a homogeneity of variance and that the data for each independent variable – in this case, each phonological variable – are evenly distributed in a bell-shaped pattern.

Feature	GOAT	/nt/	/t/	BATH	(r)	int. (r)
above 70%	10	9	7	3	5	0
30%- 70%	2	1	1	5	0	1
below 30%	1	3	5	5	8	12

Table 8.1: Percentages of idiolectal change for U.S. to England participants

Tables 8.1 and 8.2 clearly show that there is very little data falling under a bell-shaped curve. For some features, like /nt/, there were seven Americans that had 100% SBrE realisation. For Americans acquiring non-rhoticity or English acquiring rhoticity, the acquisition pattern

[239]The complexities of the status of the THOUGHT and LOT vowels in the native GA speakers were discussed in chapter 6.

Feature	/nt/	/t/	BATH	C.R.	LOT	(r)	int. (r)
above 70%	7	4	5	1	3	6	7
30%- 70%	0	4	1	6	2	1	3
below 30%	3	2	4	3	5	3	0

Table 8.2: Percentages idiolectal change for England to North America participants

follows an S-shape. Eleven participants uttered over 70% D2/ID utterances of (r); another eleven participants acquired less than 30% with regard to (r). There was only one participant who produced between 30% and 70% change of (r) towards the second dialect. For this type of situation, Chambers suggests:

> speakers... sporadically acquire new pronunciations for about 20% of the available instances as the basis for generalizing a rule, and that, once the process become rule-governed, about 80% of the instances will be affected immediately, with some portion... resisting change and perhaps remaining as residue (Chambers 1992, 695).

Most of the data for this thesis conforms to the S-shape. This was one underlying reason for declaring 70% as the point at which acquisition is determined to have occurred (see section 2.4.2). It is interesting to note that Chambers's model of lexical diffusion has been replicated here. Even at 70%, though, the participant will not speak totally like native speakers of the target variety. Since this thesis does not focus on the final, 'end state' of acquisition, 70% is sufficient enough to note that there has been considerable change in the interdialectal phonology. Most participants produced either more than 70% non-D1 utterance or less than 20%, with very few participants in between for any phonological variable. The data collected for this thesis then do not obviously form a bell-shaped curve. Thus, raw scores cannot be used. Non-parametric statistical tests must be run, and percentages facilitate use of these tests.

There were two main tests run on the data: a Friedman ANOVA and a Page L trend test. The Friedman test permits comparisons of percentages for each participant across all phonological variables to see in which variable the participants as a group produce small or large scores (Greene and D'Oliveira 1982, 56). The Friedman ANOVA tests whether one or more phonological variables has a significantly higher or lower score than the others. For more than two phonological features, the Page L trend test determines if the average scores for each test fall into a specific rank ordering.

8.1 Americans in Britain

For Americans living in London, there are thirteen participants used in the analyses. The first analysis examined only the main phonological variables: tapping; BATH; (r); and intrusive-r.

Participant	AgeArr	/t/	BATH	THOUGHT ~ LOT	non-rhoticity	intrusive-r	/nt/	GOAT
AF	0	20.45	0	41.67	0	37.5	8.333	95.24
NF	1	28.89	30.77	41.67	1.47	0	16.67	12.5
JEC	2.973	100	100	N/A	100	12.5	100	100
JNP	3.058	100	30.77	100	15.87	12.5	100	80
HS	4.493	36.36	0	75	100	0	50	85
ROP	4.715	97.67	0	91.67	19.4	12.5	100	95.45
MN	5.321	100	100	91.67	95.31	0	100	84.21
JAC	6.014	97.78	100	N/A	100	12.5	100	95
EB	6.452	18.60	46.67	90	1.49	12.5	100	85
LP	6.573	88.64	21.43	90.91	98.51	12.5	100	52.38
KN	6.83	97.78	60	91.67	1.47	0	100	90.48
ES	8.255	18.18	46.67	66.67	1.47	0	25	52.38
BB	8.318	4.55	53.33	41.67	0	0	91.67	68.42
EMB	18.21	76.19	85.71	N/A	80	62.5	33.33	66.67
CC	31.89	57.78	86.67	N/A	4.29	0	25	25

Table 8.3: Overall Performance of American Participants in England

The THOUGHT ~ LOT variable, though, was excluded. The Friedman χ^2 was significant with 10.9615, D.F. 3, with a significance of $p = 0.0119$ and $\eta^2 = 0.2108$. Because there were so many participants, the Page L score, L = 359, had to be converted to a standard z-score, z = 3.266, with a significance of $p < 0.0005$. The ranking of the variables was (variables with higher percentages first):

/t/ > BATH > (r) > intrusive-r

The second analysis examines the same four variables plus the fronting of the GOAT vowel and the tapping of medial /nt/. The Friedman χ^2 was 25.5824, D.F. 5, $p = 0.0001$ and $\eta^2 = 0.32798$. For the Page L trend test, L = 1095, z = 4.9437, $p < 0.000005$. The ranking of the variables was (feature with higher percentages first):

/nt/ > GOAT > /t/ > BATH > (r) > intrusive-r

These results confirm the hypothesis that the success of acquisition depends on the level of phonological abstractness. More specifically, these results support the prediction that output realisational differences will have greater change than rule-based contextual differences, and both of these will have greater change than differences in underlying forms. The output realisational differences are fronting of the GOAT vowel and the de-voicing of medial /t/, including /nt/ clusters, and they have the highest success rates of acquisition. The rule-governed backing of GA BATH realisation to [ɑː] or [a] in certain contexts has a lower success rate of acquisition than the phonetic realisational differences. The last variable to be acquired is non-rhoticity and the concomitant intrusive-r.

8.2 Britons in North America

Participant	AgeArr	/t/ - ʔ as ID	/t/ - ʔ as DI	BATH	*caught~cot*	rhoticity	int-r	/nt/	C.R.
AL	3.77	0	0	40	55.56	35.56	0	N/A	57.14
DP	4.44	86.36	77.27	61.54	63.64	98.49	0	83.33	0
CM	5.04	84.44	66.67	100	100.00	100	0	91.67	100
JMP	6.65	57.78	57.78	100	45.45	93.94	0	83.33	0
TL	6.67	0	0	0	41.67	4.35	12.5	8.33	69.23
AAM	7.15	24.44	20	85.71	16.67	95.65	0	25	61.54
JH	7.33	97.82	93.48	100	100.00	100	12.5	91.67	69.23
NM	8.35	95.56	82.22	100	91.67	94.03	0	83.33	58.33
TH	10.93	11.11	8.89	7.14	25.00	0	62.5	8.33	7.69
AS	14.27	60.87	60.87	7.14	8.33	42.03	37.5	75	69.23
CS	17.52	43.48	41.30	23.08	0.00	14.93	62.5	75	30.77
AWM	36.54	46.67	46.67	100	0.00	N/A	N/A	66.67	80

Table 8.4: Overall Performance of English Participants in North America

There were ten English participants living in North America used in the initial analysis for the second group looking at the five main phonological variables: tapping; THOUGHT ~ LOT merger; BATH fronting; (r); and intrusive-r. The Friedman χ^2 was 9.88, D.F. 4, approaching significance with p = 0.0591. This means that no single variable or groups of variables had a significantly higher or lower average than any other variable. The Page L = 493.5 (z = 2.751), p = 0.003, indicating that there was a significant rank ordering of means. The ranking of the variables was (feature with higher percentages first):

intrusive-r > BATH > (r) > /t/ > THOUGHT ~ LOT

Including Canadian Raising and the tapping of medial /nt/, the Friedman χ^2 was 9.6321, D.F. 6, not significant. The Page L = 1216.5, (z = 2.6696), p = 0.004. The significant ranking of the variables was (feature with higher percentages first):

intrusive-r > BATH > Canadian Raising > /nt/ joint with (r) > /t/ > THOUGHT ~ LOT

Neither of the statistical analyses fully support the hypothesis of realisational and contextual differences having a higher degree of change than differences in underlying form. That tapping had the second lowest success rate of acquisition – trailing behind even the acquisition rate of rhoticity – completely counters the original predictions of this thesis, as stated in sections 1.5, 2.6 and above. However, it is likely that native dialectal competence is interfering with the results. Two families were from the Winchester and Bristol area in southwest England. This part of England still has many – mainly older – rhotic speakers (Wells 1982, 341-342) (Trudgill 1990, 51-56). Additionally, a non-back vowel is found in the BATH lexical set and "the phonemic contrast corresponding to RP /æ/ vs. /ɑ:/ is absent or variable"

(Wells 1982, 345) much like it is in GA. The fathers in each family are rhotic and neither produces a back [ɑ:] for the BATH set. In other words, they still speak, impressionistically at least, with a southwestern accent of SBrE. Although it cannot be 100% certain, the data strongly indicate that both fathers are natively rhotic[240]. This suggests that the participants were exposed to rhoticity and a non-back BATH vowel during the acquisition of their first dialect, possibly facilitating the acquisition of these variables in the second dialect or perhaps even making the second dialect acquisition of these variables vacuous. For that reason, another analysis was run, excluding these six participants exposed to rhoticity and a non-back BATH vowel.

Participant	AgeArr	/t/ - ʔ as ID	/t/ - ʔ as DI	BATH	*caught~cot*	rhoticity	int-r	/nt/	C.R.
AL	3.77	0	0	40	55.56	35.56	0	N/A	57.14
DP	4.44	86.36	77.27	61.54	63.64	98.49	0	83.33	0
JMP	6.65	57.78	57.78	100	45.45	93.94	0	83.33	0
TL	6.67	0	0	0	41.67	4.35	12.5	8.33	69.23
AS	14.27	60.87	60.87	7.14	8.33	42.03	37.5	75	69.23
CS	17.52	43.48	41.30	23.08	0.00	14.93	62.5	75	30.77

Table 8.5: Overall Performance of non-Southwestern English Participants in North America

For the five main phonological variables, the Friedman χ^2 was 11.050, D.F. 4, $p = 0.026$ and $\eta^2 = 0.5816$. The Page L = 211.64, ($z = 3.164$), $p < 0.0005$, the trend being:

intrusive-r > /t/ > (r) > BATH > THOUGHT ~ LOT

Using the same tests, but including the phonological variables of Canadian Raising and the tapping of medial /nt/, the Friedman χ^2 was 11.4411, D.F. 6, not significant, $\eta^2 = 0.4237$. For the Page L trend test, L = 524.2, ($z = 3.3331$), $p < 0.0008$. The significant ranking of the variables was (feature with higher percentages first):

intrusive-r > /t/ > (r) > /nt/ > BATH > Canadian Raising > THOUGHT ~ LOT

It is still odd that the subset /nt/ of tapping and Canadian Raising did not have higher success rates of acquisition, as compared to rhoticity of the fronting of the BATH vowel. Regardless if these two variables are included in the analysis, it is clear that Britons acquiring GA do not follow the same pattern as Americans acquiring SBrE. No matter who is included in the statistical analyses, two items remain constant. The merger of the *cot~caught* vowel maintains the lowest success rate of acquisition. The 'loss' of intrusive-r is the most successfully acquired, followed by the tapping of medial /t/ The difficulties in quantifying

[240] Again, impressionistically, the post-vocalic /r/ they produce was slightly more retroflex and perhaps more consonantal than the /r/ and r-colouring found in native GA

intrusive-r should be taken into consideration when considering these results (see section 7.4.2.1).

8.3 Statistical Conclusions

The initial predictions on the success of acquisition was based on three types of differences: differences in the input, underlying representation, or lexical representation; differences in the output or surface realisation; differences in the rules or constraints that link input and output. Each of these differences also had further sub-divisions that might have potentially affected the rate of acquisition.

An hypothesis specifying these three types of differences might be applicable to North Americans acquiring SBrE. Indeed, the data from this thesis and the analyses of this chapter as well as the data from Chambers (1992) would confirm such an hypothesis. Like Chambers (1992), this original idea underlying this thesis was based on Americans living in the UK. It was thought that the same data collection, the same hypotheses and the same categorisation of phonological differences could also apply to Britons living in North America. This may be a design flaw leading to the statistically insignificant results listed above and something that must be considered if there is going to be further research on this specific topic.

The statistical results of Britons living in North America do not support the more complex framework of dialect acquisition regarding a three-way differentiation between phonological variables. The present results can be manipulated in order to conform to a manipulated hypothesis.

Manipulating the hypothesis entails classifying rule-based differences and output realisational differences in one category as realisational differences. By so doing, "the number and systematic relationship of the [underlying representations] are the same and only their phonetic realisations differ" (Giegerich 1992, 52). This, then, would create two phonological categories for comparison: underlying and realisational. The new hypothesis, then, would be that realisational differences are more liable to undergo interdialectal development than underlying differences.

Even with a new hypothesis, the numeric results need to be manipulated. Firstly, intrusive-r is variable in SBrE and perhaps should not have been considered because even native speakers of SBrE do not produce intrusive-r in 100% of the potential environments (see Chambers (1992, 692f.)). For Britons in North America, excluding intrusive-r would then leave a realisational difference (the tapping of medial /t/) as having the highest degree of idiolectal change and a

difference in underlying categories (the *caught*~*cot* merger) as having the lowest. An argument could possibly be made, but not here, about the acquisition of rhoticity entailing the acquisition of a rather complex series of epenthesis rules. Such arguments would have to counter the ones made in section 7.2.4 and would have to treat intrusive-r as an entirely separate process from non-rhoticity. The arguments would also have to consider the vowels represented THOUGHT and NORTH/FORCE sets as separate underlying categories as well as those from the PALM and START lexical sets.

It is far simpler and perhaps more accurate, however, to state that the data from Britons in North America do not support the hypothesis regarding realisational differences having a greater degree of change than underlying differences, no matter how rule-based differences are categorised.

Further research must be done in order to provide a general hypothesis for the acquisition of a second dialect of northern hemisphere English regarding 'order' or 'rate' or 'ease' of acquisition, particularly with regard to statistical analysis. This thesis has proposed looking at the rate of change of interdialectal development (see 2.4.2). The statistics show that the hypothesis regarding rate needs to be refined in order to achieve significant results.

Chambers (1992) presented hypotheses based on native GA speakers acquiring SBrE. These hypotheses were also presented by a native GA speaker exposed to SBrE (Chambers 1992, 674, fn.1). This thesis was originally based on Chambers (Chambers 1992), and the perspective of a native GA speaking author being exposed to SBrE was replicated. Clearly, a different perspective might help formulate an hypothesis with statistically significant results.

In this chapter, it has been shown that the definitions concerning realisational differences and underlying differences could be further tested and refined – and, indeed, slightly reformulated – in order to help produce a more reliable, testable hypothesis. It is unknown whether changes in the definitions of the phonological categories is sufficient or whether the whole hypothesis needs to be examined.

Chapter 9

Discussion and Conclusion

9.1 Introduction

There were several goals in this thesis. The first goal was to determine what an interdialect is and its functions in second dialect acquisition. In exploring the notion of interdialect, discussion of the relationship between the interdialect and both the native dialectal competence and the target dialect is inevitable.

Another aim of this thesis was to demonstrate the role of the native dialect. The analysis and discussion up to this point makes it evident that the native dialect serves as a template for the formation of the interdialect. This thesis has also shown how this template changes as the interdialect develops.

This thesis has followed a contrastive analysis approach as it relates to second dialect acquisition. In keeping with the original Contrastive Analysis Hypothesis (Lado 1957; Fries 1945, it was proposed that only the differences between the native and target varieties are acquired. This suggests that the native dialectal competence is very much a part of the dialect acquisition process.

The last main aim of this thesis is to show how phonological structure contributes to dialect acquisition. It has been seen that some phonological phenomena are more likely to undergo change in interdialectal development while others are more resilient to change and are liable to fossilise. There were other aspects of phonological structure, as it relates to dialect acquisition, discovered in this thesis, which will receive discussion later in this chapter.

These goals are not independent of each other. It is quite obvious that there is some relationship and overlap between the goals. In light of the data having been analysed and presented, these goals will be explored in more depth in the following sections.

9.2 The Interdialect

An interdialect functions as the second dialectal competence. Even if a second dialect were completely acquired, it would still be appropriate to refer to the second competence as an interdialect.

As the data have shown, very few of the participants in this study have completely acquired the target. The interdialect is between the native dialect and the target. It would seem that the phonological system, out of all of the component systems of a language, is the most resilient to change in the acquisition of a second variety, supporting the suggestions of Long (1990). Yet, the need and the desire to communicate with speakers who belong to the local community encourage change and acquisition. These two opposing forces help give an interdialect its distinctive characteristics.

An interdialect is like any other linguistic competence. One of the most important aspects of a linguistic competence is to allow communication and transmission of ideas. An interdialect also serves this function.

A language – either an idiolect or a group of closely related dialects – is likely to change. Some of this change will occur over time an in response to external influence. An interdialect is equally likely to change. In Chambers's (1992) longitudinal study, there was some change as the participants were exposed to the D2 community over time. Similar changes would probably have been seen in the participants of this thesis, had a longitudinal study been feasible. Additionally, many of the participants of this study have returned to their homes where their D1 is natively spoken. The interdialect would surely have changed with re-exposure to the D1.

Like any other linguistic competence, there are various levels of phonological representation in the interdialect. In this thesis, these levels are called the underlying representation and the surface or output realisational representation.

Also like other linguistic systems, there is a degree of variation in the interdialect. There is linguistic variation such different realisations for the same underlying representation depending on phonological context. There is also sociolinguistic variation. In the interdialect, there may be different conversational styles or registers. Because the participants were recorded

for only one session and in one setting, there is no sociolinguistic data other than age, sex and residences.

Additionally, the presence of the interviewer may have had an adverse affect on the performance data. This is known as the observer's paradox. There is no way to gauge how much accommodation was made towards the interviewer. There are some obvious cases of accommodation. Despite the accommodation, there was still some interdialectal data.

It is obvious that there is a strong interaction between the native dialect and the interdialect. Some of the unanalysed data reveal that for some speakers – especially those speakers that were accommodating towards the interviewer – the interdialect and the native dialect are completely separate systems. Switching between the two systems depending on social environment is very much like code-switching amongst bilinguals.

For other speakers, there may not be two systems. From other data, analysed and unanalysed, as well as from personal experience, it seems that for some, the first dialect itself changes upon constant exposure to a second dialect. There still may be stylistic variation or accommodation, but only as much as is found in monolingual, monodialectal speakers (see Giles 1973; Giles and Smith 1979; Giles and St. Claire 1979; Trudgill 1986 for examples of dialect accommodation). For these speakers, the interdialect and the native dialect are not separate independent entities, but the same. The role of accommodation is an avenue for further research.

For both groups – those that have an interdialect independent of the native dialect and those that do not – the initial formation of the interdialect is a duplicate of the native dialect. For those that keep the two systems separate, the interdialect, rather obviously, develops independently of the native dialect. Through lack of use, the native dialect may suffer some attrition, but this is not a certainty. Dialect attrition is another possible area in which further research can be conducted.

For those who native competence itself changes in interdialectal development, dialect acquisition equates to simultaneous dialect attrition. If the second dialect is not completely acquired, as is likely, then the 'in-between' distinctiveness of an interdialect becomes part of the native dialectal competence for this latter group.

The interdialect is an ever-changing linguistic competence, at least in the early stages. For both those that distinguish the interdialect and the native dialect and those that do not, it is clear that the native dialect plays a fundamental role in the initial state of the interdialect. The native dialect also plays a role in the further development of the interdialect.

9.3 The Role of the Native Dialect

The first dialect functions as the preliminary interdialectal competence. There is complete transfer of the native competence in the initial formation of the interdialect. For those that keep the interdialect and native dialect distinct – one for communicating to parents and family in the D1 and another for communicating in the D2 community – a second competence develops. The second competence eventually becomes independent of the native dialectal competence. For others, the first dialect itself changes and the developing interdialect and the native dialect are not independent of each other. This particular aspect of dialect acquisition was not explored in any great depth in this thesis. Those are some participants, like AF, who clearly keep the two systems distinct. At the same time, other participants do not. The exploration of 'one-system' and 'two-system' learners in the acquisition of a second dialect phonology is another possibility for further research in this field.

Regardless of whether or not the interdialect and the native dialect form two systems or one, the fact remains that the interdialect develops through manipulation of first dialect structures. Instead of acquiring new rules, underlying representations and surface representations, existing phonological structures are exploited first. There are several examples in the data that show first dialect phenomena undergoing change.

For native GA speakers acquiring the de-voiced medial /t/ of SBrE[241], only ambisyllabic /t/ is affected. Absolute initial and absolute final /t/ do not change. Additionally, for some participants, only in this one environment are there several possible outputs: the tap, the voiceless alveolar stop and the glottal stop. The existence of the multiple phones implies that the phonological rule is the same – that is, the rule that affects an underlying /t/ in ambisyllabic position is inherited from the D1 – but the output varies and is unstable. For some native SBrE speakers acquiring tapping, the glottal stop surfaces regularly. Sometimes the glottal stop appears in complementary environments with the tap. The glottal stop and the rule governing its realisation is clearly a D1 phenomenon since intervocalic glottal stops do not occur in GA. The presence of taps and glottal stops strongly suggests that the native D1 rule for glottal stops is being extended to incorporate taps in a specific environment.

The acquisition of the BATH vowel also shows native dialect influence. For the interdialectal BATH vowel, many participants in both groups produced a central [a] vowel. This [a] vowel is neither the front vowel of TRAP [æ] nor the back vowel of PALM [ɑː]. Yet, the BATH vowel only occurs in a restricted environment. This restricted environment implies phonologically

[241] Or losing tapping, depending on one's perspective.

conditioned variation, but there is a question about what the underlying representation is. It is possible that a new vowel has been incorporated in the underlying inventory, but with only a limited surface distribution. It is far more likely that a new rule has been associated with an existing D1 underlying category. The distinct vowel for the BATH lexical set shows that this rule has been acquired. The intermediate value of the BATH vowel prevents homophonic clash or merger with the output of another existing D1 category. The presence of such a rule dictates that the interdialect must allow innovation. That is, new structures such as the rule governing the vowel of the BATH lexical set must be permissible in the interdialect. At the same time, however, the new rule applies to and is constrained by native dialectal structures. Although it is clearly a new rule, it is equally clear that this new rule is exploiting an underlying D1 category rather than introducing something entirely new.

In the acquisition of a new underlying representation – either a merger of categories or the splitting of a D1 category into two – there are few, if any, existing rules and outputs that can be manipulated. Yet, the new underlying category must be incorporated into the existing D1 inventory. Additionally, the patterns and relationships between the new underlying representation and the pre-existing underlying categories must be re-evaluated. In regards to acquiring the THOUGHT $\sim$ LOT merger, the case study of the M family shows that the native dialect distinction served as the initial template in the acquisition of GA. Participant AAM maintained the distinction, but acquired GA-like acoustic values for both vowels. Participants NM and CM have merged the vowels, but the acoustic range of the merged vowel is the union of the acoustic ranges of the two distinct vowels of AAM. Phonetically, the acoustic values of the vowels changed. Phonologically, however, it can be seen how the merged vowel was derived originally from a distinction. For those who have acquired the merger, a lexical set may have become disassociated with a D1 vowel and re-associated with a D2 vowel There are two important aspects regarding the merger of vowels in terms of re-associating lexical sets. First, the disassociation to re-association process is categorical. Every member of a lexical set changes values. Second, the target vowel for one lexical set is the same target vowel as a second set. However, it is still underlying D1 vowels and lexical associations that are being changed.

There is still first dialect influence in the acquisition of (r), too. In the acquisition of non-rhoticity, it was shown that the realisational acquisition of [ə] for [ɚ] and [ɜː] for [ɝ] has consequences for all vowels followed by (r). It was the D1 value of (r) that had to change, rather than (r) being deleted in syllable rhymes. The output of an existing rule changed while the rest

of the D1 rule remain unaffected, similar to the acquisition of medial /t/. In the acquisition of rhoticity, on the other hand, a new rule had to be acquired, namely $\emptyset \rightarrow$ [r] after the low vowels [ɔː] and [ɑː]. Although this is an innovation, this new rule was incorporated into a system that was clearly inherited from the native dialect.

The native dialect, or a duplicate thereof, serves as the preliminary stages of the interdialect. As the second dialect is acquired, as the differences between the dialects are acquired and as the interdialect develops, the structures inherited from the first dialect are manipulated and exploited. For example, one of the output realisations of a D1 phonological rule changes, possibly using another realisation that already exists as part of the D1 phonic inventory. New rules are acquired, but applied to existing D1 underlying representations. Even new underlying representations have to form patterns with existing D1 underlying categories. The data have made it very clear that the first dialect is exploited as much as possible in the creation of new structures. New structures are built upon existing structures extensively.

The acquisition of a second dialect might be the introduction of new realisations, rules and categories rather than the manipulation of existing phonological structures. Inconsistency in the interdialect would be attributable to incomplete acquisition or inconsistent application of a D2 form. Yet in second dialect acquisition, inconsistent use of a D2 form still yields D1 realisations on occasion. The phonology of a second language may be fully acquired by the introduction of new realisations, rules, underlyers, etc. In second language acquisition, a whole new system is being acquired. Inevitably, new rules, realisations and categories will be introduced in the interlanguage. These new structures are independent of the native language. But even in second language acquisition, there is still first language influence or interference. Selinker (1972) refers to this as language transfer in the interlanguage. Flege (1987; 1991; 1995; Flege and Frieda 1997) calls this equivalence classification. For example, second language segments that have similar acoustic values to native language segments are assigned the native language values in the interlanguage.

In second dialect acquisition, the two systems are much more similar than two languages. The close relationship of two dialects suggests that a new D2 structure, or at last some structure very similar to it, has already been acquired in first language acquisition. This would negate the need to acquire a new D2 structure. Instead, it is more plausible to use a native structure as a template and then manipulate that native structure. The native variety plays a role in the development of both an interlanguage and an interdialect. However, because of the increased similarity between dialects, this role is enhanced in dialect acquisition.

There are learners who acquire a second dialect as a second, independent system. They maintain some sort of distinction between the D1 and the D2 much like a bilingual keeps two (or more) language systems separate. But even these dialect learners must rely on their native competence in order to communicate, at least in the early stages. Native dialect structures or duplicates thereof are manipulated in the dialect acquisition process. Any new structures are incorporated into the D1-duplicate and use as much of the existing structures as possible.

In short, the native dialect serves as the initial stages of the interdialect. Dialect learners begin second dialect acquisition with communicative competence already acquired. Further dialect acquisition entails changes made to this communicative competence. First, the existing structures are manipulated as much as possible. Then, new structures are acquired or others are deleted, but still within the parameters of the D1-like system.

9.4 Contrastive Analysis and the Relationship Between the Native Dialect, the Interdialect and the Second Dialect

It has been argued that the initial stage of the interdialect is the native dialect. One of the reasons for this argument is that only specific variables are subject to change. The phonological variables that are shared between the native dialect and the target dialect do not change.

Only medial, ambisyllabic /t/ is tapped, glottalised or de-voiced, depending on the first dialect. Onset /t/ preceded by a consonant or coda /t/ followed by a consonant do not change. Underlying /d/ does not appear to change, although there are cases in which ambisyllabic /d/ also becomes de-voiced for GA speakers exposed to SBrE over a long period (Shockey 1984). In the interdialect, the other voiceless stops, /p, k/ do not change voicing in ambisyllabic position.

The BATH lexical set is subject to idiolectal change. However, the front TRAP vowel /æ/ and the back PALM vowel /ɑː/ maintain their native values.

In the acquisition of (r), onset (r) never changes. It is always [+ consonantal]. Participant HS, who produced [w] for (r) had not yet acquired the articulation of consonantal [r] natively. Nonetheless, a consonantal approximant was uttered for (r) in syllable onsets.

The phonological components that are the same in the D1 and the D2 do not change. Only the differences are acquired. Sometimes the differences are not acquired successfully, but the fact remains that it is only the differences that seem to change.

This supports the basic version of the Contrastive Analysis Hypothesis. In the contrastive analysis hypothesis, second language performance data, i.e. the interlanguage, can be predicted by knowing exactly how the two varieties differ. In other words, a contrastive analysis can predict that only the differences between varieties are acquired. It is clear that a contrastive analysis is a valid hypothesis for second dialect acquisition.

In the analysis chapters, the state of the phonological variable was detailed for each variety. Some of the present-day analyses were different than what is found in the standard reference texts. However, in detailing each phonological variable – regardless if it was the standard description or otherwise – the differences between the dialects were highlighted. The actual analysis of the data shows that these differences are what change in interdialectal development.

The native dialect serves as the template of the interdialect and the second dialect serves as the ultimate target. Because of the large amount of overlap and similarity between two dialects, especially two standard varieties of English, only the differences between the varieties become targeted and become subject to idiolectal change in interdialectal development.

9.5 Phonological Structure in Dialect Acquisition

9.5.1 Success of Acquisition

One of the initial hypotheses of this thesis was that some phonological variables will be more successfully acquired, or be more susceptible to change than others. Specifically, it was predicted that realisational differences will be more successfully acquired than differences in underlying form. It was further hypothesised that output realisational differences are more successfully acquired than new rules.

For Americans acquiring SBrE, both of these general hypotheses were confirmed. The highest degree of idiolectal change was in the acquisition of de-voiced [t] in ambisyllabic environment. The backing of the BATH vowel had the next highest amount of change. The phonological variable to show the least amount of change was non-rhoticity.

The acquisition of GA by native SBrE speakers was predicted to follow this same pattern. It did not, at least according to the statistics. Instead, the variable that showed the most idiolectal change in he acquisition of GA was tapping of ambisyllabic /t/. Rhoticity had the next highest degree of change, followed by the BATH vowel. The variable that seemed most resilient to change was the merger of the THOUGHT and LOT vowels. Except for rhoticity, this follows the same pattern as the native GA speakers acquiring SBrE. The acquisition of rhoticity by

native SBrE speakers did not follow any expected phonological patterns. It can still be said that there is a strong tendency for realisational differences to have a greater degree of change than underlying differences.

This information is derived from the statistics that were presented in chapter 8. The statistics show a general trend that realisational differences undergo more change than underlying differences. Beyond general tendencies, however, the statistics are unreliable. There are many reasons for this unreliability, some of which are due to the statistical analyses themselves.

The first reason why the statistics are not entirely reliable is that the two groups are not evenly distributed. There were thirteen native GA speakers acquiring SBrE compared to ten native SBrE speakers acquiring GA. These numbers varied, depending on who was included based on the D1 status of rhoticity. Additionally, the number of potential tokens varies a great deal between the phonological variables: thirteen for the BATH vowel and over fifty for (r). Many statistical tests can cope with these discrepancies. Another problem however was that many potential chances for a given variable were not taken. So, taking (r) as an example, participant ES took sixty-eight changes but participant HS took sixty. There is over ten percent difference, which will have an effect on the statistical analyses. Such discrepancy was found in all of the variables.

This does not mean that the statistics are invalid. It just means that they only support a general tendency that realisational differences are more liable to change than differences in underlying form. The statistics are unreliable for supporting specific hypothesis about one phonological variable compared to each and every other variable.

Another reason for the unreliability in the statistics is in the experiment design. One of the main experimental field devices, the phrase list, was based on Chambers's study of dialect acquisition (Chambers 1992). Chambers looked specifically at native speakers of Canadian English acquiring SBrE. In Canadian English, there is no doubt as to the merger of the THOUGHT and LOT vowels. In other accents of GA, there is uncertainty as to the merged status of these vowels, as was described in chapter 6. Chambers's original experiment design should have permitted an analysis of SBrE speakers acquiring Canadian English, or an accent of GA in which the THOUGHT and LOT vowels are undisputedly merged. In addition to the unknown value of the native GA THOUGHT $\sim$ LOT vowel(s), some of the native SBrE-speaking participants were either rhotic or exposed to rhoticity during first language acquisition.

The uncertainty of the D1 status of the THOUGHT and LOT vowels and of rhoticity is not a fault in the experiment design. It was more a failure in ensuring that the participants met certain requirements. However, were stricter requirements used, there would have been far fewer participants whose interdialects would have been analysed. Despite these drawbacks, they are only faults in the statistical analyses. As was seen in the analysis chapters, these 'drawbacks' still provided for interesting phonological and interdialectal examination.

It can be stated with a high degree of confidence that realisational differences and rule-based differences are more likely to be successfully acquired than differences in underlying forms. Medial /t/ and the BATH vowel are more likely to change than the THOUGHT ~ LOT vowel(s) and (r). Apart from the statistics, there was an impression of more change in medial /t/ than the BATH vowel and more change in the THOUGHT ~ LOT vowel(s) than in (r). These impressions must be re-tested in other research given the uncertainty of the D1 status of the latter two variables.

9.5.2 Phonological Structure

There are more than statistical arguments for stating that realisational differences change before underlying differences. There are also phonological arguments.

Dialect learners only have access to phonetic output. In fact, a speaker of any human language only has access to the continuous sound signal of the phonetic output. It is from this phonetic output that patterns can be formed and rules generalised. Any changes to these rules and patterns implies change to the phonetic output. It follows that any changes to these rules and patterns, at least in dialect acquisition, must be initiated through changes in the phonetic output.

This notion is most clearly exemplified in the acquisition of non-rhoticity by native GA speakers. The first phenomenon to change was the syllable rhyme output of /r/, from [ɝː] to [ɜː] in stressed syllables and from [ɚ] to [ə] in unstressed syllables. Following this change, the second element of the rhotic centring diphthongs of GA changed. When the realisational difference of syllable-rhyme (r) changed to [ə], the new output of (r) merged with the [ə] of other unstressed or reduced vowels. Thus a phonetic, realisational change led to the merger of the commA and lettER lexical sets. After the change of [ɚ] to [ə] in non-low centring diphthongs, the low vowels followed by (r) changed from [ɑɚ] to [ɑː] and from [ɔɚ] to [ɔː]. These changes led to the merger of several lexical sets. Thus, change in underlying structure can result from phonetic change.

It appears that only in the acquisition of non-rhoticity is there a strict implicational order. Namely, the merger of letter and comma implies that there has been a change in the phonetic realisation of syllable-rhyme (r). The phonetic implication of underlying change is most clearly exemplified in the acquisition of non-rhoticity. However, the implication can also be seen in the acquisition of the THOUGHT and LOT vowel(s), albeit less clearly than in the acquisition of non-rhoticity.

Those who are acquiring the THOUGHT ~ LOT merger – both in this study and in the current change in progress in GA – the acoustic quality of the distinct vowels changes. These acoustic changes include both the vowel length and the vowel quality. The two vowels become closer phonetically in both quality and duration before there is any merger of underlying categories.

Syllable-rhyme (r) and the THOUGHT ~ LOT vowels are the only examples of underlying differences examined in this thesis. It has been demonstrated that the phonetic components of these variables need to change first. That is, the component realisational differences – for example, syllable-rhyme, monophthongal (r) or the vowel length and quality of the THOUGHT and LOT vowels – must change before there can be any change in the underlying representation. The idea of acquiring the components before acquiring the whole variable can be extended to realisational differences as well.

For tapping of medial /t/, it was demonstrated that a tap is comprised of two component features. The first component is voicing. The second component is the very short duration of the articulation. In both the acquisition of the tap and the acquisition of the de-voiced alveolar stop, these two components were not acquired together. Participant JEC had used the D2 duration but maintained the D1 voicing for ambisyllabic /t/ in acquiring the de-voiced realisation. Likewise, participant JOH had used the D2 voicing but maintained the D1 duration in acquiring a tap. If the components of a phonetic difference must change before the whole variable, even if it is only one phone, then the argument can feasibly be extended to the realisational components of an underlying difference. In other words, acquisition or change of realisational difference precedes acquisition or change of differences in underlying forms.

There is also an interdialectal argument for realisational differences changing before underlying differences. A realisational difference can be found in many places throughout a phonological system. For example, a similar rule may be shared between dialects[242], but the output realisation for one environment may differ. The governing environment may be slightly broader or more restricted in one dialect or another. A shared rule might apply to

[242] Meaning that the same underlying representation is affected in the same governing environment.

fewer or more underlying input categories in one dialect or another. A rule found in one dialect may not exist in another dialect. More specifically, a group of words associated with one underlying category in the D1 and associated with another in the D2, but the difference can be acquired as a rule. All of these are types of realisational differences in that the underlying representations are unaffected (Giegerich 1992, 52). There are many opportunities for exploitation and manipulation in interdialectal development.

Differences in underlying forms, in general, require some sort of innovation. The acquisition of an underlying difference cannot readily manipulate existing structures. Any changes in existing structures that lead to a change in underlying form starts with the change in a realisational difference. Those realisational changes may fossilise before there is any underlying change. A difference in underlying forms can be constrained by the D1. For example, the acquisition of the THOUGHT ~ LOT distinction must result with the vowels having different acoustic values. The constraint from the D1 is that the two vowels must be in a long-short/tense-lax pair like the rest of the underlying vowel monophthongs in English. There are no rules nor realisations of shared rules that can be exploited. Thus, the acquisition of the distinction is an innovation. Unless the acquisition of an underlying difference is initiated through the acquisition of a realisational difference, e.g. non-rhoticity, there are very few existing D1 structures than can be manipulated in the acquisition of a difference in underlying form.

In the acquisition of the THOUGHT ~ LOT vowel(s), there are no realisational differences that can readily be exploited. There are phonetic features such as the acoustic value or duration that can be used in the implementation of changes in the underlying categories. These phonetic features, though, are not classified as realisational differences between the dialects. The lack of a realisational difference as part of the underlying difference inhibits realisational initiation of change of the underlying form.

In the acquisition of rhoticity, there is a potential realisational difference that can be exploited in the subsequent acquisition of an underlying difference. Namely, syllable-rhyme (r) in stressed syllable can change from [ɜː] to [ɜˠː]. This could lead to the distinction of [ə] and [əˠ] in unstressed position and ultimately work its way through the (native) secondary system of underlying categories that compensates for the loss of rhoticity. However, this does not appear to be the case. The acquisition of rhoticity does not seem to follow any of the expected patterns of this thesis. Earlier it was mentioned that if there were no realisational difference to be manipulated, a difference in underlying form would require a certain degree of innovation.

Such an innovation seems to be how the underlying differences of rhoticity are acquired. In the early stages in the acquisition of rhoticity there seems to be a rule inserting an epenthetic [r] after the low vowels [ɑː] and [ɔː]. Instead of manipulating realisational differences in the existing D1 phonology, this innovation relies on diachronic knowledge. Chomsky and Halle (1968) presume that the underlying synchronic phonology of English is similar to that found in Middle English. In SPE, the phonology also contains much diachronic information, such as the Great Vowel Shift. To say that native English speakers have something similar to Middle English as their underlying phonology borders on the absurd. Yet, the acquisition of rhoticity follows the reverse of the historical patterns. The change of the low vowels of the START and NORTH/FORCE vowels to long monophthongs is a fairly recent historical change and the first change in the acquisition of rhoticity. Giegerich (1997; 1999) proposes that these long monophthongs are underlyingly the historical centring diphthongs. The relationship of historical change and interdialectal change is another avenue of research that can be followed.

However, it seems clear that – aside from the acquisition of rhoticity – realisational differences change before differences in underlying form. The realisational difference may be part of an underlying difference and thus must change first by implication. A realisational difference might not be part of an underlying difference, but is still liable to change more readily because it is more concrete and accessible to the dialect learner. There are also more structures in the native dialect that can be manipulated in the acquisition of a realisational difference than there are in the acquisition of a difference of underlying form.

9.6 Summary

This thesis has shown that an interdialect is a complex linguistic system. The interdialect serves as the second dialectal competence of the dialect learner. The interdialect is initially a duplicate of the native competence and interdialectal development equates to the manipulation of first dialect phonological structures. For some dialect learners, the D1 itself is manipulated and there is only one phonological system. Other learners keep the native dialect and the interdialect as two, distinct and discrete systems.

In the acquisition of a second dialect phonology, realisational differences and rule-based differences are more likely to have a higher rate of change and a higher success rate of acquisition than differences in underlying form. Ambisyllabic /t/ is the output realisational difference examined in this thesis and the BATH vowel is the rule-based difference. Rhoticity, non-rhoticity and the THOUGHT $\sim$ LOT vowel(s) are the underlying differences.

The acquisition of rhoticity by native SBrE speakers does not follow this general pattern, however. Statistically, the acquisition of rhoticity has a higher success rate than the acquisition of the BATH vowel. Additionally, instead of manipulating realisational differences, the acquisition of rhoticity begins by splitting a merged underlying category and following the reverse course in the historical loss of rhoticity.

This thesis was initially intended to be a replication of Chambers (1992), even though this thesis was not a longitudinal study. There is much research on second dialect acquisition that can be pursued following these two studies. Other longitudinal studies would show how an interdialect develops over time. There could be comparisons of the acquisition of a second dialect phonology to a second language phonology. More data and more research would confirm or invalidate the generalisations made in the phonological analyses of this thesis.

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